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IN THE

Supreme Court of the United States

OCTOBER TERM, 1984

DEVEX CORPORATION, ET AL.,

Petitioners,

v.

GENERAL MOTORS CORPORATION,

Respondent.

APPENDIX TO PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE THIRD CIRCUIT

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UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

NOS. 83-1770, 83-1771,
83-1892, 84-5003, 84-5011,
84-5139, and 84-5141

DEVEX CORPORATION, TECHNOGRAPH, INC., WILLIAM C. McCOY, THEODORE A. TeGROTHENHUIS, FREDERICK B. ZIESENHEIM, MARJORIE TeGROTENHUIS, WILLIAM C. McCOY, JR., and KATHERINE M. BASSETT,

Plaintiffs-Appellants, Cross-Appellees

v.

GENERAL MOTORS CORPORATION

Defendant-Appellee, Cross-Appellant

Appeal from the United States District Court
for the District of Delaware
D.C. Docket No. 3058

Submitted Under Third Circuit Rule 12(6)
September 13, 1984
Before: GIBBONS, GARTH, and ROSENN,
Circuit Judges
(Opinion Filed November 28, 1984)

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OPINION OF THE COURT

ROSENN, *Circuit Judge*.

This appeal arising out of the final stages of a 28 year old lawsuit for patent infringement, involves questions pertaining to postjudgment interest and interest on costs. Defendant General Motors (GM) has been ordered to pay plaintiffs (collectively referred to

hereafter as Devex) reasonable royalties in the amount of approximately $8.8 million, prejudgment interest in the amount of approximately $11 million, and approximately $7 million in postjudgment interest. Disputes remain over the rate at which postjudgment interest should have been assessed; whether plaintiffs should have been awarded interest on postjudgment interest, and whether plaintiffs should have been awarded interest on costs. We affirm.

I. Litigation History

Plaintiffs are the owners and licensees of Re-issue Patent #24,017 (the Devex or Hendricks patent), which covered a lubricating process used in the cold forming of automobile parts under pressure, and which expired in 1969.

The original complaint in this case was filed in 1956 in the Northern District of Illinois. That court held in 1962 that the Devex patent was invalid. The United States Court of Appeals for the Seventh Circuit reversed and remanded to the district court. *Devex Corp. v. General Motors Corp.*, 321 F.2d 234 (7th Cir. 1963), *cert. denied*, 375 U.S. 971 (7th Cir. 1963). At that juncture, GM successfully moved to have the case transferred to Delaware. *Devex Corp. v. General Motors Corp.*, 146 U.S.P.Q. 346 (N.D. Ill. 1965).

After an unsuccessful motion for summary judgment by Devex, and the ensuing trial for patent infringement, the United States District Court for the District of Delaware ruled that General Motors had not infringed Devex's patent. 316 F.Supp. 1376 (D. Del. 1970). Devex appealed to this court, which reversed. *Devex Corp. v. General Motors Corp.*, 467 F.2d 257 (3d Cir. 1972), *cert. denied*, 411 U.S. 973 (1973).

The district court ruled on the damages issue in 1980, basing its decision partly on the report of the Special Master. *Devex Corp. v. General Motors Corp.*,

494 F. Supp. 1369 (D. Del.1980). The court awarded Devex a judgment of $19,726,236.55, consisting of $8,813,945.40 in royalties and $10,912,291.15 in prejudgment interest.[1] Postjudgment interest and costs in an undetermined sum were also awarded. GM appealed this determination to this court which affirmed the holding of the district court. *Devex Corp. v. General Motors Corp.*, 667 F.2d 347 (3d Cir. 1981).

In response to petitions of GM and Devex, the Supreme Court granted a writ of certiorari to GM on the issue of the applicable standard for determining whether prejudgment interest should be awarded. The Court affirmed the award of prejudgment interest. *General Motors Corp. v. Devex Corp.*, 103 S.Ct. 2058 (1983).

While the parties were preparing for the Supreme Court case, the plaintiffs obtained an order from this court ordering GM to pay the amount of the uncontested part of the judgment, royalties in the sum of $8,813,945.40. GM paid this amount on July 7, 1982. After the Supreme Court's decision, in June 1983, GM paid $11,022,854.97, the amount of the prejudgment interest.

Two months later, the district court ruled that the rate of postjudgment interest would be 16% per annum. It ordered General Motors to pay the sum of $7,170,344.39 in postjudgment interest on the original $19 million judgment. *Devex Corp. v. General Motors Corp.*, Civ. Action No. 3058 (D. Del. Sept. 9, 1983). GM contended, however, as it does now, that the correct rate of postjudgment interest was 6%, and paid

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1. General Motors, in fact, paid $11,022,854.97 in prejudgment interest pursuant to the court's order of an additional $3,071.22 for each day after August 31, 1980, up to and including the date of entry of judgment. Devex Corp. v. General Motors Corp., 569 F. Supp. 1354, 1365 n.1. (D. Del. 1983).

plaintiffs only $2.2 million approximately; the remainder was paid into court pending the outcome of this appeal. The district court also awarded plaintiffs interest on their costs, but denied Devex's motion for "delay damages" -- interest on the postjudgment interest.

GM appeals from the district court's ruling fixing the rate of postjudgment interest at 16% and from its award of interest on costs. Devex cross-appeals from the court's denial of its motion for interest on the postjudgment interest.

II. The Rate of Postjudgment Interest

GM argues that the district court erred in awarding postjudgment interest at the rate of 16%. In determining the rate under state law pursuant to 28 U.S.C. § 1961 (1976), the district court held that, under 6 Delaware Code § 2091(a), the correct rate was 16% -- 5% over the Federal Reserve discount rate. *Devex Corp. v. General Motors Corp.*, 569 F. Supp. at 1365-67.

Section 2301(a) provides:

> Where there is no expressed contract rate, the legal rate of interest shall be 5% over the Federal Reserve discount rate including any surcharge as of the time from which interest is due, provided that *where the time from which interest is due predates April 18, 1980, the legal rate shall remain as it was at that time.*

Del. Code Ann. tit. 6, § 2301(a) (Cum. Supp. 1982) (emphasis added).

GM emphasizes that in the instant case the complaint was filed in 1956, and damages amounting to payment of a reasonable royalty were calculated as of that date. *Devex Corp. v. General Motors Corp.*, 667 F.2d at 363-364. Therefore, according to GM, the time from which interest is due predates 1980, and the

district court should have applied the legal rate as it was prior to 1980, which was 6%.[2]

In support of this contention, GM cites Delaware cases and federal diversity cases decided under Delaware law, which hold that, where damages are calculated as of a time before April 18, 1980, the prejudgment interest on those damages will be calculated at 6%, and that the postjudgment interest should be calculated at the same rate as the prejudgment interest. *Pack & Process, Inc. v. Nabisco, Inc.*, Civ. 78-285, slip op. at 2-5 (D. Del. Sept. 18, 1984); *Helmut A. Papendick v. Robert Bosch GmbH*, 562 Civ. 1977, letter op. at 3-5 (Del. Super. Ct. Aug. 4, 1981); *affirmed* No. 238, 1981 (Del. Aug. 4, 1981); *Rollins Environmental Services, Inc. v. WSMW Industries, Inc.*, 426 A.2d 1363, 1367 (Del. Super. Ct. 1980). The district court found these cases to be inapposite, because they involved prejudgment interest which had been calculated at 6% according to Delaware law, and reflected a policy of the Delaware courts that the same rate be applied to prejudgment and postjudgment interest, in order to avoid segmentation of interest. We agree with the district court that the cases cited by GM do not apply to the instant case where the prejudgment interest was determined according to federal law, 35 U.S.C. § 284.[3]

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2. Del. Code Ann. tit. 6, § 2301(a) (1974) provided that "[t]he legal rate of interest for the loan or use of money . . . shall be 6 percent per annum . . . ." The statute was amended to its current form effective April 18, 1980.

3. 35 U.S.C. § 284 (1982) provides for prejudgment interest in patent cases: "Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty . . . together with interest and costs as fixed by the court." The Supreme Court held in General Motors v. Devex, 108 S.Ct. at 2062, that the purpose of the statute was to afford patent owners "complete compensation."

28 U.S.C. § 1961 provides only that postjudgment interest shall be calculated from the date of the entry of the judgment, *at the rate allowed by State law.*" (Emphasis added.) We interpret this statute literally, and hold that the district court correctly borrowed from Delaware law only its current interest rate of 16%. *But cf. Turner v. Japan Lines, Ltd.*, 702 F.2d 752, 757-58 (9th Cir. 1983) (court applied previous state interest rate, according to Oregon precedents which held that a change in the rate of statutory interest did not apply to judgments entered before rate change.)

This result best advances the policy underlying 28 U.S.C. § 1961: compensation of the wronged party for loss of the use of money, in a changing economy where changes in the state statutory interest rate reflect changes in the value of the use of money.[4] We therefore hold that the district court did not err in its determination that the correct postjudgment interest was 16% per annum.

III. Interest on Postjudgment Interest

We now turn to the questions of whether the plaintiffs should have been awarded "delay damages" -- interest on postjudgment interest -- and whether Delaware law or federal law applies to this determination. Both GM and the district court assumed that 28 U.S.C. § 1961 (1976) mandated the application of state law on the issue of delay damages. We disagree.

28 U.S.C. § 1961 provides:

> Interest shall be allowed on any money judgment in a civil case recovered in a district court . . . . Such interest shall be calculated from the date of the entry of the judgment, at *the rate* allowed by State law.

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4. *See generally* Note, *Interest on Judgments in the Federal Courts*, 64 Yale L.J. 1019, and cases cited therein.

28 U.S.C. § 1961 (1981) (amended 1982) (emphasis added).[5]

There is federal authority for the proposition that when a cause of action arises from a federal statute, the question of whether interest may be *allowed*, as distinguished from the *rate*, is governed solely by federal law. *See Dependahl v. Falstaff Brewing Co.*, 653 F.2d 1208, 1219 (8th Cir), *cert. denied* 454 U.S. 968 (1981); *Carpa v. Ward Foods, Inc.*, 567 F.2d 1316, 1321 (5th Cir. 1978) (overruled on other grounds, *Copper Liquor v. Adolph Coors Brewing Co.*, 701 F.2d 542 (5th Cir. *in banc* 1983)); *Perkins v. Standard Oil of California*, 487 F.2d 672, 675 (9th Cir. 1973). *But see United States v. Hannon*, 728 F.2d 142, 146 (2d Cir. 1984) (Newman, J., concurring). We therefore hold that federal law determines whether Devex should be allowed interest on the postjudgment interest awarded by the district court in 1980 and computed in 1983.

With respect to delay damages -- or interest on interest -- we note, as a preliminary matter, that under normal circumstances, the United States rule would have applied to GM's payments on the judgment it owed Devex.[6] Under that rule, GM's July 7, 1982,

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5. The current version of 28 U.S.C. § 1961 provides that postjudgment interest shall be calculated at a rate equal to the coupon issue yield equivalent of the average auction price for the last auction of fifty-two week United States treasury bills. Section 1961(b) provides that postjudgment interest be compounded annually. 28 U.S.C. § 1961 (1982).

6. The United States rule, which provides that payments be applied first to accrued interest and then to principal, has been followed by the federal courts for almost a century and a half. *See, e.g.*, Story v. Livingston, 38 U.S. (13 Pet.) 359, 371 (1839); Whiteside v. Washington Loan & Trust Co., 95 F.2d 83, 87 (D.C. Cir. 1937); Gamble v. Wimberly, 44 F.2d 329, 331 (4th Cir. 1930); Ohio Savings Bank & Trust Co. v. Willys Corp., 8 F.2d 463, 466-68 (2d Cir. 1925); Torosian v. National Capital Bank of Washington, 411 F. Supp. 167, 172-175 (D.D.C. 1976).

payment of $8,813,945.40 would have been applied first to the approximately $5 million of postjudgment interest which had accrued since October 6, 1980, on the $19,726,236.55 judgment, and second to the $19,726,236.55 judgment itself. The remainder of that judgment, approximately $16 million, would then have accrued about $2 million in interest until June 6, 1983, when GM made its second payment of $11,022,854.97. That payment would have been applied first to the accrued interest, and then to the principal, leaving a balance due Devex of more than $7 million. That balance would, in turn, have accrued interest until August 30, 1983, when GM complied with the district court's order and made its third payment of $7,170,344.

The United States rule provides, however, that payments are applied first to interest and then to principal, only "in the absence of a clearly expressed intention [by the parties] to handle allocation some other way." *Nat G. Harrison Overseas Corp. v. American Barge Sun Coaster*, 475 F.2d 504, 507 (5th Cir. 1973). In the case at bar, the parties agreed, and the court ordered, that GM's first payment would be applied only to the royalty part of the judgment. *Devex Corp. v. General Motors Corp.*, Civil Action No. 3058 (D. Del. July 8, 1982) (order directing clerk to enter satisfaction of the royalty part of the judgment). GM's second payment was applied to the prejudgment interest part of the judgment, rather than to the postjudgment interest which had accrued between July 7, 1982, and June 6, 1983, again pursuant to an agreement made by the parties and order of the court. *Devex Corp. v. General Motors Corp.*, Civil Action No. 3058 (D. Del. June 7, 1983) (order directing clerk to enter satisfaction of the prejudgment interest portion of the judgment). Because it agreed to the allocation of these payments to principal rather than to interest,

Devex is now precluded from the beneficial application of the United States rule.[7]

On appeal, Devex argues that it is entitled to interest on the postjudgment interest which accrued between July 7, 1982, and August 30, 1983. The district court refused to grant interest on the postjudgment interest, because Delaware law forbids the compounding of interest.[8]

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7. The dissent asserts that the orders do not evidence the kind of clearly expressed intention to deviate from the United States rule that was evident in *Harrison Overseas*. Dissenting opinion at 3. However, the plaintiffs did sign the consent orders directing the clerk to enter satisfaction of the *royalty part* of the judgment and the *prejudgment interest part* of the judgment, thus expressing a clear intention that the sums paid by General Motors be credited to the principal sums owed, and not to the postjudgment interest which had accrued thereon. Furthermore, the application of the United States rule was never raised or briefed by the plaintiffs.

The dissent notes that the district court had not yet determined the rate of postjudgment interest as of the time the consent orders were signed. Dissenting opinion at 3. In fact, the district court's original order provided for postjudgment interest at the *rate allowed by state law*. Devex Corp. v. General Motors Corp., Civil Action No. 3058 (D. Del. Oct. 6, 1980) (final judgment ordering payment of prejudgment interest, damages, postjudgment interest, and costs). Thus, instead of agreeing to the terms of the consent order entered by the district court, the plaintiffs could have asked that General Motors' payments be applied to this amount.

The dissent also presupposes that General Motors' appeals were primarily for delay. Dissenting opinion at 4. The issues raised on appeal by General Motors regarding pre- and postjudgment interest were genuine and not dilatory, and there is no reason to punish General Motors for raising them.

8. The district court also denied interest on postjudgment interest on the ground that "as of this time, the Court has not ordered the payment of postjudgment interest." Devex Corp. v. General Motors Corp., 569 F. Supp. at 1368. The court apparently overlooked its final judgment dated October 6, 1980, ordering postjudgment interest at the rate allowed by state law. Devex Corp.

Although we decide this issue under federal rather than state law, we agree with the district court that allowing interest on the postjudgment interest would amount to the compounding of interest, which "as a general rule, is not allowed to be computed on a debt." *Cherokee Nation v. United States*, 270 U.S. 476, 490 (1925). *See also Brooklyn Bank v. O'Neil*, 324 U.S. 697, 715 (1945).

In support of its contention that an award of interest on postjudgment interest would not constitute illegal compounding of interest, Devex cites cases in which a judgment granted interest on an amount resulting from *an unsatisfied former judgment* on which interest had accrued. *See, e.g., United States v. Hannon*, 728 F.2d at 145; *Dorey v. Dorey*, 609 F.2d 1128, 1133 (5th Cir. 1980); *Hellenic Lines Ltd. v. Gulf Oil Corp.*, 359 F.2d 403, 404 (2d Cir. 1966). In the case at bar, however, the postjudgment interest cannot be considered an unsatisfied former judgment, because the amount of the judgment itself was in dispute until the Supreme Court decision in May 1983, and the rate of postjudgment interest was not fixed until August 1983.

National Bank of the Commonwealth v. Mechanics National Bank, 94 U.S. 437 (1876), is not to the contrary. In that case, the Court allowed interest on an aggregate amount of unpaid installments of interest. The Court found in that case that the original claims for interest had been approved by the Comptroller, and thus were the equivalent of a judgment. *Id.* at 439-440. In the case at bar, the rate of postjudgment interest was not determined finally until August 1983, and the amount of principal was not even determined until May 1983. Thus, the amount of

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v. General Motors Corp., Civil Action No. 3058 (D. Del. Oct. 6, 1980) (final judgment ordering payment of prejudgment interest, damages, postjudgment interest, and costs).

postjudgment interest cannot be said to have been a liquidated amount equivalent to a judgment. *Compare Royal Indemnity Co. v. United States*, 313 U.S. 289, 295-296 (1941) (interest allowed on liquidated amount of unpaid interest); *Martin v. The Star Publishing Co.*, 107 A.2d 795, 796-797 (Del. Super. 1954), *modified* 126 A.2d 283 (Del. 1956) (interest allowed on delinquent installments of interest which constitute liquidated demands for payment wrongfully withheld).

Because we conclude that awarding interest on the postjudgment interest would amount to the compounding of interest, we hold that the district court did not err in denying Devex's claim for "delay damages."

IV. Interest on Costs

GM contends that the district court erred in awarding interest on costs. It argues that the court should have followed the so-called "traditional rule" that interest is not to be awarded on costs. *Devex Corp. v. General Motors Corp.*, Civ. Action No. 3058, slip. op. at 9 (D. Del. Dec. 1, 1983). The various courts of appeals, however, have in recent years approved awards of interests on costs under section 1961 in a variety of situations. *R.W.T. v. Dalton*, 712 F.2d 1225, 1234-1235 (8th Cir.), *cert. denied* 104 S.Ct. 527 (1983); *Copper Liquor, Inc. v. Adolph Coors Brewing Co.*, 701 F.2d at 543-545.[9] GM argues that these were public interest, quasi-public interest, or private attorney general cases, and therefore are distinguishable. The rationale behind the modern trend toward awarding interest on costs is unrelated to the type of case involved. It

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9. Other circuits that have also approved awards of interest on costs in: Mt. Hood Stages, Inc. v. Greyhound Corp., 616 F.2d 394 (9th Cir.), *cert. denied* 449 U.S. 831 (1980); City of Detroit v. Grinnell, 575 F.2d 1009 (2d Cir. 1977); Harris v. Chicago & Great Western Railroad, 197 F.2d 829 (7th Cir. 1952).

developed instead from an awareness of the rising cost of money and of escalating and enormous costs in complex litigation. In this case, the agreed costs amount to $161,960.07. As the Fifth Circuit noted in *Copper Liquor*:

> The historical rule that costs do not bear interest, like many court rules, antedates the modern practice of applying economic and business principles to judicial administration . . . . It developed at a time when interest rates were not so high nor costs so large as both now are, and when, therefore, the net effect of disallowance was smaller.

Copper Liquor Inc. v. Adolph Coors Co., 701 F.2d at 544.

We agree with the Fifth Circuit that allowing interest on costs better serves the purpose of awarding this expense to the prevailing party by more nearly compensating it for the litigation expenses. *Id.* Therefore, we conclude that the district court did not err in awarding Devex interest on costs.

V. Conclusion

We hold that the district court did not err in determining the rate of postjudgment interest to be 16%, in denying Devex interest in postjudgment interest, and in awarding plaintiffs interest on costs. Accordingly, the judgment of the district court will be affirmed.

GIBBONS, *Circuit Judge*, dissenting:

I concur in the opinion of the Court insofar as it affirms the district court's award of postjudgment interest and the award of interest on costs. I would

reverse, however, the district court's holding that Devex is not entitled to collect interest on the delinquent postjudgment and prejudgment interest payments.

The United States rule, under which payments are applied first to accrued interest and then to principal, should govern this case unless the parties have "clearly expressed [an] intention to handle allocation in some other way." *Nat G. Harrison Overseas Corp. v. American Barge Sun Coaster*, 475 F.2d 504, 507 (5th Cir. 1973). The majority infers such an agreement from two court orders. That inference is not supportable.

The majority's position overextends the holding of *Harrison Overseas*. In *Harrison Overseas*, the fifth circuit held that the United States rule did not apply to a judgment on a note that clearly stated that each payment would constitute 1/71 of the principal due, and 1/71 of the interest due.[1] *Id.* The parties in *Harrison Overseas* clearly intended payments to be applied ratably to interest and principal. No such clear intention to avoid the United States rule is evidenced here.

The majority's conclusion that the parties did not intend the United States rule to apply is based on two district court orders. On July 8, 1982, before the postjudgment or prejudgment interest had been paid, the district court directed the clerk to enter satisfaction of the royalty portion of the judgment. On June 7, 1983, before the postjudgment interest had been paid, the district court directed the clerk to enter satisfaction of the prejudgment interest portion of the judgment.

---

1. The agreement in *Harrison Overseas* provided that the total interest due was "payable with each installment of principal, payable in seventy-one (71) equal monthly installments . . . ." 475 F.2d at 506 n.4.

These orders do not evidence the kind of "clearly expressed intention" to deviate from the United States rule that was apparent in *Harrison Overseas*. A court order, even if obtained by motion of the parties, is fundamentally different from a freely negotiated contract. Even if these orders could be viewed as an agreement between the parties, there is no evidence that the parties or the court considered the possibility that the orders would later have an effect on interest payments. In July 1982, when Devex moved for an order directing General Motors to pay the reasonable royalty portion of the judgment, the prejudgment interest portion of the judgment was on appeal to the Supreme Court, and the district court had not yet determined the postjudgment interest rate. Since the royalty award was the only uncontested part of the judgment at that point, it was the only part that Devex could collect immediately. The plaintiffs were concerned only with collecting the royalty judgment without undue delay. *See*, Transcript of July 2, 1982 at 14. The district court gave no indication of an intention that this order relieve General Motors of future interest payments. In fact, the court indicated an intent to require General Motors to pay the judgment immediately so that the plaintiffs, and not General Motors, would have the benefit of the use of the money while the remainder of the judgment awaited appeal. Tr. at 6. Thus neither the parties nor the court evidenced a clear intention to avoid application of the United States rule to the payments by General Motors on the judgment owed to Devex.

Finally, strong policy concerns militate against extending the *Harrison Overseas* exception to the circumstances of this case. The majority's holding allows General Motors to delay payment of long-overdue interest with impunity. If no interest is assessed, General Motors simply has no incentive to pay the judgments promptly. This appeal has allowed General

Motors to enjoy a further interest-free delay, during which time plaintiffs are not being compensated for the lost time-value of money due under the judgment in their favor. By allowing General Motors the interest-free use of delinquent payments, the court is depleting plaintiffs' real recovery as surely as if it had simply reduced the amount of their award. It is, moreover, rewarding General Motors for resorting to this court on several occasions in the interest of delay.

A True Copy:

Teste:

Clerk of the United States Court of Appeals
for the Third Circuit

UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

NOS. 83-1770, 83-1771, 83-1799, 83-1892, 84-5003, 84-5011, 84-5139, 84-5140, and 84-5141

DEVEX CORPORATION, TECHNOGRAPH, INC., WILLIAM C. McCOY, THEODORE A. TeGROTHENHUIS, FREDERICK B. ZIESENHEIM, MARJORIE TeGROTENHUIS, WILLIAM C. McCOY, JR., and KATHERINE M. BASSETT,

Plaintiffs-Appellants, Cross-Appellees

v.

GENERAL MOTORS CORPORATION

Defendant-Appellee, Cross-Appellant

Appeal from the United States District Court
for the District of Delaware
D.C. Docket No. 3058

Submitted Under Third Circuit Rule 12(6)
September 13, 1984
Before: GIBBONS, GARTH, and ROSENN,
Circuit Judges
(Opinion Filed November 28, 1984)

ORDER AMENDING SLIP OPINION

The slip opinion in the above-entitled case be and is hereby amended as follows:

Page 13, part V, add to the paragraph the following:

Each side to bear its own costs.

BY THE COURT:

/s/ Max Rosenn.

Circuit Judge

Dated: December 5, 1984

A True Copy:

Teste:

Clerk of the United States Court of Appeals
for the Third Circuit

Opinion of the District Court, As Amended August 22, 1983

DEVEX CORPORATION, et al., Plaintiffs,

v.

GENERAL MOTORS CORPORATION, Defendant.

Civ. A. No. 3058

United States District Court, D. of Delaware

Aug. 8, 1983.

On Postjudgment Interest Aug. 22, 1983
As Amended Aug. 22, 1983.

OPINION

CALEB M. WRIGHT, Senior District Judge.

ON POSTJUDGMENT INTEREST

As it has so frequently in the past, this patent case once again demands the Court's attention. After nearly twenty-seven years of this litigation, one would think there would be nothing left to decide. Important issues, however, remain to be resolved. On October 6, 1980, this Court entered an Order in this action which provided, *inter alia:*

> 5. Defendant General Motors Corporation shall pay to plaintiff:
>
> (i) $8,813,945.50 plus pre-judgment interest in the amount of $10,912.291.05 (which represents interest through August 31, 1980) totalling $19,726,236.55; plus pre-judgment interest of $3,071.22 for each day thereafter up to and including the date of entry of this judgment;

> (ii) plus post-judgment interest from the date of entry of this judgment at the rate allowed by State law as provided by 28 U.S.C. §1961.

All aspects of this Court's Order were affirmed on appeal. *See Devex Corp. v. General Motors Corp.*, 667 F.2d 347 (3d Cir. 1981), *aff'd.*, ____ U.S. ____, 103 S.Ct. 2058, 76 L.Ed.2d 211 (1983). General Motors paid the royalty award of $8,813,945.50 on July 7, 1982, and the pre-judgment interest award of $11,022,854.97[1] on June 6, 1983. Consequently, the Court must now resolve two issues. First, the court must determine the proper rate of post-judgment interest as provided for in Paragraph 5(ii) of the October 6, 1980 Order. Second, the Court must decide whether the plaintiffs are entitled to damages for delay in the payment of post-judgment interest. These issues will be addressed *seriatim.*

28 U.S.C. §1961 governs the rate of post-judgment interest in this case. Section 1961 provides in relevant part:

> Interest shall be allowed on any money judgment in a civil case recovered in a district court. . . . Such interest shall be calculated from the date of the entry of judgment, at the rate allowed by State law.[2]

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[1] This figure represents the final amount of pre-judgment interest due pursuant to the Court's Order of October 6, 1980.

[2] On April 2, 1982, Congress amended 28 U.S.C. § 1961. The amendment changes the basis for the rate of post-judgment interest from "the rate allowed by State law" to the "rate equal to the coupon issue yield equivalent (as determined by the Secretary of the Treasury) of the average accepted auction price for the last auction of fifty-two week United States Treasury bills settled immediately prior to the date of the judgment." Act of April 2, 1982, Pub.L. No. 97-164, Sec. 302(a), 1982 U.S.Code Cong. & Ad.News (96 Stat.) 55-6. The amendment, however, does not impact upon this case because it did not take effect until October 1, 1982, well after judgment was entered. *See id.*, Sec. 402 at (96 Stat.) 57.

Consequently, in resolving this matter the Court must award post-judgment interest at the rate permitted by Delaware law on the date judgment was entered, October 6, 1980.

The rate of interest allowed on judgments in Delaware is the same as the "legal rate of interest" found in 6 *Del.C.* § 2301.[3] *Rollins Environmental Services, Inc. v. WSMW Industries, Inc.*, 426 A.2d 1363, 1367 (Del.Super.Ct. 1980). The amended 6 *Del.C.* § 2301(a), which became effective on April 18, 1980, provides in relevant part:

> Any lender may charge and collect from a borrower interest at any rate agreed upon in writing not in excess of 5% over the Federal Reserve discount rate including any surcharge thereon, and judgments entered after May 13, 1980, shall bear interest at the rate in the contract sued upon. Where there is no expressed contract rate, the legal rate of interest shall be 5% over the Federal Reserve discount rate including any surcharge as of the time from which interest is due; provided, that where the time from which interest is due predates April 18, 1980, the legal rate shall remain as it was at such time.

First, this case does not involve a contract which specifies an interest rate. Applying the remainder of this statutory provision; because judgment was entered on October 6, 1980, which is after April 18, 1980, the proviso is also inapplicable. Consequently, it seems obvious to the Court that 6 *Del.C.* § 2301(a) requires a post-judgment interest rate at 5 percent above the Federal Reserve discount rate in

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[3] Delaware Courts of Equity may fix interest rates above the legal rate found in 6 *Del.C.* § 2301 in the interests of fairness. *See Lynch v. Vickers Energy Corp.*, 429 A.2d 497, 506 (Del.1981). The plaintiff contends that as a patent court this Court is a court of equity, and can apply a rate of interest greater than that provided for in 6 *Del.C.* § 2301. The Court does not address this contention, however, because 6 *Del.C.* § 2301 provides an adequate rate of post-judgment interest in this case.

existence on October 6, 1980. The Federal Reserve discount rate on October 6, 1980 was 11 percent. Therefore, pursuant to Section 2301(a), the rate of post-judgment interest in this case must be set at 16 percent.

General Motors, however, contends that the rate of post-judgment interest should be fixed at 6 percent, not 16 percent. General Motors bases its contention on the fact that pre-judgment interest was awarded from 1956 in this case, which is well before April 18, 1980. The "legal rate of interest" on judgments prior to April 18, 1980, was 6 percent. *See Rollins Environmental Services, Inc.*, 426 A.2d at 1366. General Motors cites to several Delaware state court and federal court diversity cases which hold that when pre-judgment interest is due before April 18, 1980, the rate of pre-judgment interest should be fixed at 6 percent. *See, e.g., Oliver B. Cannon and Son, Inc. v. Fidelity and Casualty Co. of New York*, C.A. 79-129 (Dkt. Item 210), Slip Op. at 2-4 (D.Del. June 8, 1982); *Rollins Environmental Services, Inc.*, 426 A.2d at 1368-69. These cases further hold that if prejudgment interest is fixed at 6 percent because it was due before April 18, 1980, post-judgment interest must also be fixed at 6 percent, even though final judgment was entered after April 18, 1980. *Oliver B. Cannon and Son, Inc.*, Slip Op. at 4-5; *Rollins Environmental Services, Inc.*, 426 A.2d at 1368. The rationale for these is that 6 *Del.C.* § 2301 has been construed not to allow for the segmentation of the rate of interest based upon the formal entry of judgment. *See Papendick v. Robert Bosch GmbH*, 562-CA-1977, Slip Op. at 4 (Del. Super.Ct. August 4, 1981), *aff'd*, No. 238 1981 (Del. March 11, 1982) (unreported opinion). General Motors in essence contends that post-judgment interest should be set at 6 percent because pre-judgment interest was awarded from a date prior to April 18, 1980. The Court cannot accept General Motors argument.

The cases cited by General Motors are all state court cases or federal diversity cases *where the law governing the*

rate of both pre-judgment and post-judgment interest was the law of Delaware. See, e.g., Oliver B. Cannon and Son, Inc., Slip Op. at 1-2, 4-5. Pre-judgment interest in this patent litigation was awarded in the Court's discretion solely as a matter of federal law pursuant to 35 U.S.C. § 284. *See General Motors Corp. v. Devex Corp.*, ___ U.S. ___, 103 S.Ct. 2058, 2060, 76 L.Ed.2d 211 (1983). Therefore, the Court finds that the cases cited by General Motors are inapposite. State law had absolutely no bearing on the award of pre-judgment interest. The law of Delaware has application in this case only on interest awarded after October 16, 1980 pursuant to 28 U.S.C. § 1961. The fact that pre-judgment interest was awarded as a matter of federal law from a date prior to April 18, 1980, is completely irrelevant in determining what the rate of post-judgment interest should be under 6 *Del.C.* § 2301 on a judgment entered after April 18, 1980. Consequently, the Court holds that the rate of post-judgment interest will be 16 percent.[4]

The Court now turns to the plaintiffs' claim pertaining to delay damages. The parties agree that post-judgment interest runs on the $8,813,945.50 royalty award from October 6, 1980, the date judgment was entered, to July 7, 1982, the date that General Motors paid the royalty

[4] Even assuming *arguendo* that the decisions cited by General Motors were applicable to this case, the Court would still not fix the rate of post-judgment interest at 6 percent. The cases cited by General Motors hold that 6 *Del.C.* § 2301 does not allow for the segmentation of the rate of interest based upon the formal entry of judgment. *See, e.g., Papendick,* Slip Op. at 4. In other words, these decisions "have held that the rate of post-judgment interest should be the same as pre-judgment interest." *Oliver B. Cannon and Son, Inc.,* Slip Op. at 5. In this case, pre-judgment interest was fixed at the Moody's Average Corporate Bond Rate. Consequently, this rate, which was approximately 15 percent for the relevant time period, and not the 6 percent rate urged by General Motors, would be the proper rate of post-judgment interest if the precedent cited by General Motors was applicable to this case.

award. The parties further agree that post-judgment interest runs on the $11,022,824.97 pre-judgment interest award from October 6, 1980, the date the judgment was entered, to June 6, 1983, the date that General Motors paid the pre-judgment interest. The plaintiffs, however, make other claims for post-judgment interest that General Motors does not agree to.

In addition to the post-judgment interest that the parties agree upon, the plaintiffs claim they are entitled to interest on the unpaid post-judgment interest that accrued on the $8,813,945.50 royalty award from October 6, 1980, the date of judgment, to July 7, 1982, the date of payment of the royalty award. Similarly, the plaintiffs claim they are entitled to interest on the unpaid post-judgment interest that accrued on the $11,022,824.97 pre-judgment interest award from October 6, 1980, the date of judgment, to June 6, 1983, the date of payment of the pre-judgment interest. The plaintiffs correctly point out that based upon a 16 percent interest rate, approximately $2,000,000 in post-judgment interest accrued on the $8,813,945.50 royalty award from October 6, 1980 to July 7, 1982. The plaintiffs seek 16 percent interest on this $2,000,000 from July 7, 1982, the date the plaintiffs claim this post-judgment interest should have been paid, until the date it is actually paid. The plaintiffs similarly point out that based upon a 16 percent interest rate, $4,701,474.05 in post-judgment interest accrued on the pre-judgment interest award from October 6, 1980 to June 6, 1983. The plaintiffs seek 16 percent interest on this $4,701,474.05 in post-judgment interest from June 6, 1983, the date the plaintiffs claim this post-judgment interest should have been paid, until the date it is actually paid. The plaintiffs claim they are entitled to this additional interest as "delay damages" because General Motors wrongfully withheld payment of post-judgment interest. The plaintiffs' position is without merit.

As of this time, the Court has not ordered post-judgment interest to be paid. Therefore, the plaintiffs are incorrect when they maintain that post-judgment interest was due on the royalty award and the pre-judgment interest award on July 7, 1982 and June 6, 1983, respectively. Because the Court has not yet ordered the payment of post-judgment interest, General Motors has not delayed in the payment of that interest. Consequently, there can be no "delay damages." What the plaintiffs actually seek is interest on interest, i.e., compound interest, which is not permitted under Delaware law. *See, e.g., Pack & Process, Inc. v. Nabisco, Inc.*, C.A. No. 78-285, Slip Op. at 6-7 (D.Del. September 18, 1981) (and authorities cited therein). Therefore, the plaintiffs claim "delay damages" will not be allowed.

The Court requests the parties to calculate the interest due in accordance with this Opinion, and submit an Order within five days from the date of entry of this Opinion.

Order of the District Court, Dated September 9, 1983

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

DEVEX CORPORATION, et al.,

Plaintiffs,

v.

GENERAL MOTORS CORPORATION,

Defendant.

Civil Action No. 3058

ORDER

This 9th day of September, 1983, for the reasons set forth in this Court's Opinion of August 22, 1983, and the Court having heard the arguments of counsel on September 7, 1983, it is hereby ORDERED:

1. Postjudgment interest at the rate of 16% per annum is awarded in favor of plaintiffs and against General Motors Corporation in the amount of $7,170,344.39.

2. Plaintiffs' claim for damages for delay in the payment of postjudgment interest is denied.

3. The Clerk of the Court shall instruct Delaware Trust Company to forthwith transfer $2,204,880.90 (representing $2,688,879.15 conceded to be owed to plaintiffs by General Motors Corporation less $483,998.25 withheld by the Court in connection with the claims of the TeGrotenhuis and Ziesenheim plaintiffs for a share of the postjudgment interest) of the funds and investments held by Delaware Trust Company pursuant to this Court's Order of August 30, 1983, to the Technograph-GM Fund Account at Delaware Trust Company (Account No. 123-929-5).

4. Delaware Trust Company shall advise this Court, by letter, that it has complied with paragraph 3 of this Order.

5. The balance of the funds and investments held by Delaware Trust Company pursuant to this Court's Order of August 30, 1983, shall continue to be held, invested, and reinvested pursuant to that Order until further Order of this Court to be entered after this Order becomes final by expiration of the time for appeal or until final determination of an appeal, if any.

6. The Court declines to enter this Order pursuant to Fed.R.Civ.P. 54(b).

s/ *Caleb M. Wright*

Senior Judge

APPROVED AS TO FORM:

POTTER ANDERSON & CORROON

By /s/ *Robert K. Payson*

Robert K. Payson
Attorneys for Technograph, Inc.

MORRIS, NICHOLS, ARSHT & TUNNELL

By /s/ *Dennis H. Hatch, Jr.*

William H. Sudell, Jr.
Attorneys for TeGrotenhuis
and Ziesenheim Plaintiffs

CONNOLLY, BOVE, LODGE & HUTZ

By /s/ *A.G. Connolly Jr.*

Arthur G. Connolly, Jr.
Attorneys for Defendant,
General Motors Corporation

Order of the District Court, Dated August 30, 1983

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

DEVEX CORPORATION, et al.,

Plaintiffs,

v.

GENERAL MOTORS CORPORATION,

Defendant.

Civil Action No. 3058

ORDER

This 30th day of August, 1983, the Clerk of this Court now having in his possession a check of General Motors Corporation in the amount of $7,170,344.39 representing postjudgment interest calculated in accordance with this Court's Opinion of August 22, 1983,

NOW, THEREFORE, IT IS ORDERED:

1. The Clerk of the Court shall endorse the aforesaid check in the amount of $7,170,344.39 payable only to Delaware Trust Company, and deliver the same to Robert K. Payson, Esquire. The said Payson shall deliver said check to Delaware Trust Company, together with a conformed copy of this Order.

2. Delaware Trust Company shall forthwith cause the aforesaid check to clear the issuing bank and it shall deposit the funds collected in an account to be opened in the name of the "Clerk of the Court of the United States District Court for the District of Delaware, Civil Action No. 3058," and such funds, to the fullest extent possible, shall be invested in insured money market accounts or

United States Treasury Bills, at the option of Robert K. Payson, Esquire.

3. Delaware Trust Company shall advise this Court and undersigned counsel, by letter, as to how the funds in the account established pursuant to paragraph 2 hereof have been invested and reinvested.

4. No distributions shall be made from the account established pursuant to paragraph 2 hereof except upon further order of this Court.

5. The entry of this Order is without prejudice to any party's right to appeal from the Order to be entered on this Court's Opinion dated August 22, 1983, or any party's arguments as to when, how, and how much of the aforesaid funds shall be distributed.

/s/ *Caleb M. Wright*

Senior Judge

CONSENTED TO:

POTTER ANDERSON & CORROON

By /s/ *Robert K. Payson*

Robert K. Payson
Attorneys for Plaintiffs

MORRIS, NICHOLS, ARSHT & TUNNELL

By /s/ *William H. Sudell, Jr.*

William H. Sudell, Jr.
Attorneys for TeGrotenhuis
and Ziesenheim Plaintiffs

CONNOLLY, BOVE, LODGE & HUTZ

By /s/ *Arthur G. Connolly Jr.*

Arthur G. Connolly, Sr.
Attorneys for Defendant,
General Motors Corporation

Order of the Third Circuit
Dated June 30, 1982

UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

June 9, 1982

Nos. 80-2550/51

DEVEX CORPORATION, et al.,

vs.

GENERAL MOTORS CORPORATION

Devex Corp., et al., Appellants in No. 80-2550
General Motors Corporation, Appellant in No. 80-2551

(D.C. Civil No. 3058)

Present: GIBBONS and HUNTER, *Circuit Judges;* and STERN, *District Judge.**

1. Motion by plaintiffs-appellants that the Clerk be directed to send down this Court's judgment, in lieu of formal mandate (a) affirming the District Court's judgment in the amount of $8,813,945.50, constituting the reasonable royalty award part of the Judgment, plus postjudgment interest thereon from October 6, 1980, the date of entry thereof, at the rate allowed by State law as provided by 28 U.S.C. 1961, and (b) postponing mandate as to the balance of the District Court's final judgment pending Supreme Court review of prejudgment interest;

2. On June 8, 1982, Lester Taufen, Esquire, counsel for appellee-cross-appellant, advised this office by telephone that an opposition to above motion will be filed on behalf of GMC;

in the above-entitled cases. Any answer which would be due by June 17, 1982, will be forwarded upon receipt of same.

Respectfully,

/s/ *Sally Mrvos/mce*
Sally Mrvos, Clerk

mmd
Enc.

The foregoing motion is granted. See *Barnes v. United States*, No. 82-5095, 3d Cir., May 10, 1982.

By the Court,

/s/ John J. Gibbons
Judge

Dated: June 30, 1982

*Sitting by designation

Order of the District Court, Dated July 7, 1982

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

DEVEX CORPORATION, et al.,

Plaintiffs,

v.

GENERAL MOTORS CORPORATION,

Defendant.

Civil Action No. 3058

ORDER

This 7th day of July, 1982, the Clerk of this Court now having in his possession a check in the amount of $8,813,-945.50 from General Motors Corporation in partial satisfaction of the Final Judgment in favor of the plaintiffs dated October 6, 1980, in this case; and

The Court having determined that said fund should be invested by Delaware Trust Company, Ninth and Market Streets, Wilmington, Delaware, for this Court;

NOW, THEREFORE, IT IS ORDERED:

1. The Clerk of the Court shall endorse the aforesaid check in the amount of $8,813,945.50 payable only to Delaware Trust Company and deliver the same to Robert K. Payson, Esquire. The said Payson shall deliver said check to Delaware Trust Company, together with a conformed copy of this Order.

2. Upon receipt of said fund, it shall be deposited in an account to be opened in the name of "Clerk of the Court of the United States District Court for the District of Delaware,

Civil Action No. 3058" for the deposit of all moneys not otherwise invested as directed by this Order.

3. Delaware Trust Company shall invest and reinvest to the extent possible all of the moneys, including accrued interest, in United States Treasury Bills in the name of the Court or for the account of the Court, with a maturity date no more than thirty (30) days, and to retain possession of all such treasury bills and moneys subject to the further order of this Court.

4. Delaware Trust Company shall collect thirty-five dollars ($35.00) as its fee for its initial purchase of treasury bills. Delaware Trust Company shall be entitled to the same fee ($35.00) each time it reinvests in new treasury bills. The fees shall be collected from moneys in the savings account that are not invested in treasury bills. Delaware Trust Company and Robert K. Payson shall determine from to time the amount to be retained in said account and not invested in treasury bills.

5. Upon each investment or reinvestment, Delaware Trust Company shall inform this Court and undersigned counsel by letter the amount invested in treasury bills and the amount retained in the savings account.

/s/ Caleb M. Wright

United States District Court Judge

CONSENTED TO:

POTTER ANDERSON & CORROON

By */s/ Robert K. Payson*

Robert K. Payson
Attorneys for Plaintiffs

MORRIS, NICHOLS, ARSHT & TUNNELL

By */s/ William H. Sudell, Jr.*

William H. Sudell, Jr.
Attorneys for Certain Plaintiffs

CONNOLLY, BOVE & LODGE

By /s/ *Lester J. Taufen*

Arthur G. Connolly, Sr.
Attorneys for Defendant,
General Motors Corporation

Order of the District Court, Dated July 8, 1982

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

DEVEX CORPORATION, et al.,

Plaintiffs,

v.

GENERAL MOTORS CORPORATION,

Defendant.

Civil Action No. 3058

ORDER

This 8th day of July, 1982, the defendant General Motors Corporation ("GM") having paid $8,813,945.50 into the Court and GM's check for this amount having been deposited into the Delaware Trust Company in accordance with the July 7, 1982 Order of this Court; and

The aforesaid check having cleared the issuing bank on July 8, 1982 so that these funds are now available for investment by Delaware Trust Company;

NOW, THEREFORE, IT IS ORDERED:

1. The Clerk of this Court is directed to enter satisfaction of the reasonable royalty portion of the judgment entered on October 6, 1980 in this case against GM in the principal amount of $8,813,945.50.

2. Post judgment interest at a rate to be determined will accrue on the satisfied judgment in this case against GM through, but not after, July 7, 1982.

CONSENTED TO:

POTTER ANDERSON & CORROON

By /s/

Robert K. Payson
Attorneys for Plaintiffs

MORRIS, NICHOLS, ARSHT & TUNNELL

By /s/

William H. Sudell, Jr.
Attorneys for Certain Plaintiffs

CONNOLLY, BOVE & LODGE

By /s/ *Arthur G. Connolly Sr.*

Arthur G. Connolly, Sr.
Attorneys for Defendant,
General Motors Corporation

/s/ *Caleb M. Wright*

United States District Court
Judge

Order of the District Court, Dated July 9, 1982

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

DEVEX CORPORATION, et al.,

Plaintiffs,

v.

GENERAL MOTORS CORPORATION,

Defendant.

Civil Action No. 3058

PARTIAL SATISFACTION OF JUDGMENT

Defendant General Motors Corporation ("GM") having complied with the July 7, 1982 Order of this Court by paying into the Court and having deposited into the Delaware Trust Co. the amount of $8,813,945.50; and

The aforesaid compliance having been stated in the July 8, 1982 Order of this Court;

IT IS ORDERED that satisfaction of the reasonable royalty portion of the judgment entered on October 6, 1980 against GM in the principal amount of $8,813,945.50 is hereby entered.

Dated: 7/9/82

John R. McAllister, Jr., Clerk

By: /s/ *James J. Yacucci*
Chief Deputy Clerk

Order of the District Court, Dated September 10, 1982

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

DEVEX CORPORATION, et al.,

Plaintiffs,

v.

GENERAL MOTORS CORPORATION,

Defendant.

Civil Action No. 3058

ORDER

WHEREAS, on July 2, 1982, plaintiffs filed a motion requesting, *inter alia,* that this Court determine the appropriate interest rate to be used in computing postjudgment interest on the reasonable royalty judgment of $8,813,945.50; and

WHEREAS, defendant objected to plaintiffs' motion on the ground, *inter alia,* that the requested relief was not ripe for decision because of the issues in this case now pending before the Supreme Court of the United States; and

WHEREAS, the Court has considered the written submissions of the parties and the arguments of counsel with respect to defendant's objection and has concluded that the motion was prematurely filed.

NOW, THEREFORE, IT IS HEREBY ORDERED that the Court will not now determine the issues raised in plaintiffs' motion.

/s/ *Caleb R. Wright*
Senior Judge

Dated: September 10, 1982

Approved as to form.

/s/ *Robert K. Payson*	/s/ *Arthur G. Connolly, Sr.*
Robert K. Payson William H. Sudell Attorneys for Plaintiffs	Arthur G. Connolly Attorneys for Defendant

Order of the District Court, Dated September 28, 1982

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

DEVEX CORPORATION, et al.,

Plaintiffs,

v.

GENERAL MOTORS CORPORATION,

Defendant.

Civil Action No. 3058

ORDER TO STAY EXECUTION

WHEREAS, on September 10, 1982 the Court ruled that it was premature to determine the rate of postjudgment interest at that time; and

WHEREAS, on September 22, 1982 plaintiffs ("Devex") sought a writ of execution with instructions to levy on defendant's property in Delaware, and defendant ("GMC") filed a motion to deny or vacate this proposed execution; and

WHEREAS, the Court has considered the written submissions and arguments of the parties and has concluded that this case is not now in a proper posture for a writ of execution, but that the parties should submit further briefs on the issue of postjudgment interest.

NOW, THEREFORE, IT IS HEREBY ORDERED that Devex's proposed writ of execution herein shall be stayed, and shall remain under seal, until further Order of the Court after further briefing on the issue of postjudgment interest.

/s/ *Caleb M. Wright*
Senior Judge

Dated: September 28, 1982

APPROVED AS TO FORM:

POTTER ANDERSON & CORROON

By: s/ *Richard E. Poole*

Richard E. Poole
Attorneys for Plaintiffs

MORRIS, NICHOLS, ARSHT & TUNNELL

By: s/ *William H. Sudell, Jr.*

William H. Sudell, Jr.
Attorneys for Certain Plaintiffs

CONNOLLY, BOVE & LODGE

By: s/ *Arthur G. Connolly, Sr.*

Arthur G. Connolly, Sr.
Attorneys for Defendant

Order of the District Court, Dated June 6, 1983

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

DEVEX CORPORATION, et al.,

Plaintiffs,

v.

GENERAL MOTORS CORPORATION,

Defendant.

Civil Action No. 3058

ORDER

This 6th day of June, 1983, the Clerk of this Court now having in his possession a check in the amount of $11,022,854.97 from General Motors Corporation in partial satisfaction of the Final Judgment in favor of the plaintiffs dated October 6, 1980, in this case; and

The Court having determined that said fund should be held by Delaware Trust Company, Ninth and Market Streets, Wilmington, Delaware, for this Court:

NOW, THEREFORE, IT IS ORDERED:

1. The Clerk of the Court shall endorse the aforesaid check in the amount of $11,022,854.97 payable only to Delaware Trust Company and deliver the same to Robert K. Payson, Esquire. The said Payson shall deliver said check to Delaware Trust Company, together with a conformed copy of this Order.

2. Upon receipt of said fund, it shall be deposited in an account to be opened in the name of "Clerk of the Court of the United States District Court for the District of Delaware,

Civil Action No. 3058", subject to further Order of this Court.

/s/ *Caleb M. Wright*
United States District Court Judge

CONSENTED TO:

POTTER ANDERSON & CORROON

By /s/ *Robert K. Payson*
Robert K. Payson
Attorneys for Plaintiffs

MORRIS, NICHOLS, ARSHT & TUNNELL

By /s/ *William H. Sudell, Jr.*
William H. Sudell, Jr.
Attorneys for Certain Plaintiffs

CONNOLLY, BOVE, LODGE & HUTZ

By /s/ *Arthur G. Connolly Sr.*
Arthur G. Connolly, Sr.
Attorneys for Defendant,
General Motors Corporation

Order of the District Court, Dated June 7, 1983

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

DEVEX CORPORATION, et al.,

Plaintiffs,

v.

GENERAL MOTORS CORPORATION,

Defendant.

Civil Action No. 3058

ORDER

This 7th day of June, 1983, the defendant General Motors Corporation ("GM") having paid $11,022,854.97 into the Court and GM's check for this amount having been deposited into the Delaware Trust Company in accordance with the June 6, 1983 Order of this Court; and

The aforesaid check having cleared the issuing bank on June 6, 1983, so that such funds are now available to be held by Delaware Trust Company for this Court;

NOW, THEREFORE, IT IS ORDERED:

1. The Clerk of this Court is directed to enter satisfaction of the pre-judgment interest portion of the judgment entered on October 6, 1980 in this case against GM in the principal amount of $11,022,854.97.

2. All issues concerning post-judgment interest and costs are hereby reserved for determination by this Court.

/s/ *Caleb M. Wright*

Senior Judge

CONSENTED TO:

POTTER ANDERSON & CORROON

By /s/ *Robert K. Payson*

Robert K. Payson
Attorneys for Plaintiffs

MORRIS, NICHOLS, ARSHT & TUNNELL

By /s/ *William H. Sudell, Jr.*

William H. Sudell, Jr.
Attorneys for Certain Plaintiffs

CONNOLLY, BOVE, LODGE & HUTZ

By /s/ *Arthur G. Connolly Sr.*

Arthur G. Connolly, Sr.
Attorneys for Defendant,
General Motors Corporation

Order of the District Court, Dated June 8, 1983

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

DEVEX CORPORATION, et al.,

Plaintiffs,

v.

GENERAL MOTORS CORPORATION,

Defendant.

Civil Action No. 3058

PRE-JUDGMENT INTEREST SATISFACTION OF JUDGMENT

Defendant General Motors Corporation ("GM") having complied with the June 6, 1983 Order of this Court by paying into the Court and having deposited into the Delaware Trust Company the amount of $11,022,854.97; and

The aforesaid compliance having been stated in the June 7, 1983 Order of this Court;

IT IS ORDERED that satisfaction of the pre-Judgment interest portion of the Judgment entered on October 6, 1980 against GM in the principal amount of $11,022,854.97 is hereby entered.

/s/ John R. McAllister, Jr.

John R. McAllister, Jr., Clerk

Dated: June 8, 1983

Amended Judgment of the Third Circuit, Dated December 5, 1984

UNITED STATES COURT OF APPEALS FOR THE THIRD CIRCUIT

Nos. 83-1770, 83-1771, 83-1892, 84-5003
84-5011, 84-5139 and 84-5141

DEVEX CORPORATION, et al.,

Appellants, Cross-Appellees

vs.

GENERAL MOTORS CORPORATION,

Appellees, Cross-Appellant

(D.C. Civil No. 3058)

ON APPEAL FROM THE UNITED STATES DISTRICT COURT
FOR THE ---------- DISTRICT OF DELAWARE

Present: GIBBONS, GARTH and ROSENN, Circuit Judges

AMENDED JUDGMENT

This cause came on to be heard on the record from the United States District Court for the ---------- District of Delaware and was submitted under Third Circuit Rule 12(6) on September 13, 1984.

On consideration whereof, it is now here ordered and adjudged by this Court that the orders of the said District Court, entered September 9, 1983, and December 1, 1983, be, and the same are hereby affirmed. Each side to bear its own costs.

ATTEST

/s/ Sally Mrvos

Clerk

December 5, 1984

Certified as a true copy and issued in lieu
of a formal mandate on February 20, 1985.
Test: /s/ *M. Elizabeth Ferguson*
Chief Deputy Clerk, U.S. Court of
Appeals for the Third Circuit

Order of the Third Circuit Denying Rehearing, Dated February 12, 1985

UNITED STATES COURT OF APPEALS

FOR THE THIRD CIRCUIT

Nos. 83-1770/1, 83-1892, 84-5003
84-5011, 84-5139 and 84-5141

DEVEX CORPORATION, ET AL.,

Appellants/Cross-Appellees

v.

GENERAL MOTORS CORPORATION,

Appellees/Cross-Appellants

(D.C. Civil No. 3058)

SUR PETITION FOR REHEARING

PRESENT: ALDISERT, *Chief Judge,* GIBBONS, HUNTER, WEIS, GARTH, SLOVITER, and BECKER, *Circuit Judges,* ROSENN, *Senior Circuit Judge.*

The petition for rehearing filed by appellants/cross-appellees, Devex Corportion, et al., in the above-entitled case having been submitted to the judges who participated in the decision of this court, and to all the other available circuit judges of the circuit in regular active service, and no judge who concurred in the decision having asked for rehearing, and a majority of the circuit judges of the circuit in regular active service not having voted for rehearing by the court in banc, the petition for rehearing is denied.

By the Court

/s/
.....

DATED: February 12, 1985 Circuit Judge

IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

DEVEX CORPORATION, ET AL.
Plaintiffs,

v.

GENERAL MOTORS CORPORATION
Defendant.

Civil Action
No. 3058

REPORT OF SPECIAL MASTER PURSUANT TO F.R.C.P. 53(e)

February 7, 1980

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I. PROCEDURAL BACKGROUND

A. History of the Case

In late 1956 and in 1957, plaintiffs filed lawsuits against General Motors Corporation and Houdaille Industries, Inc., respectively, in the United States District Court for the Northern District of Illinois, claiming in both actions that defendants had infringed Claim 4 of the Henricks Reissue Patent No. 24,017. The patent had been reissued on June 7, 1955, on Original Patent No. 2,588,234 dated March 4, 1952, as the result of an application filed October 31, 1950. The patent expired on March 4, 1969 (Princ. Doc.,* Tab 1, p. 1; Plaintiffs' Br. on Acctg., p. 1; Defendant's Br., p. I-16; APTO,** App. I, p. 2).

The Houdaille and General Motors actions were thereafter consolidated (382 F.2d at 19). Following trial, by opinion dated February 1, 1962, implemented by a final judgment entered June 29, 1962, Claim 4 was held by the District Court (through District Judge Edwin A. Robson) to be invalid and void (Princ. Doc., Tab 2).

From the finding of invalidity, plaintiffs appealed. The Court of Appeals reversed, *Devex Corporation, et al. v. General Motors Corporation, et al.*, 321 F.2d 234 (7th Cir. 1963), *cert. den.*, 375 U.S. 971 (1964), adjudicating the validity of Claim 4 of the Henricks patent.

After remand plaintiffs' action against General Motors was transferred to the District of Delaware. *Devex Corporation v. General Motors Corporation*, 146 U.S.P.Q. 546 (N.D. Ill. 1965). Houdaille Industries remained as a defendant in the

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* The reference is to a booklet entitled "Principal Documents on Accounting" put together by defendant, and filed with plaintiffs' concurrence.

** "APTO" refers to the Pretrial Order on Accounting.

Chicago case (263 F.Supp. at 20). After discovery both sides in the Houdaille case moved for summary judgment on the issue of infringement. Plaintiffs prevailed. *Devex Corporation, et al. v. Houdaille Industries, Inc.*, 148 U.S.P.Q. 74 (1965). The Court of Appeals again reversed, *Devex Corporation v. Houdaille Industries, Inc.*, 382 F.2d 17 (7th Cir. 1967), concluding that summary judgment was inappropriate. Later the Devex-Houdaille controversies were resolved by settlement (467 F.2d at 258).

Meantime, the Devex action against General Motors was transferred to the District of Delaware and assigned to then Chief (now Senior) Judge Caleb M. Wright. Plaintiffs moved for summary judgment. In opposition to the motion General Motors advanced a finely spun venue theory toward the proposition that it was not bound by the validity holding of the Seventh Circuit in the Houdaille case. Rejecting this argument, the Court held that the Seventh Circuit's holding of the validity of Claim 4 of the Henricks Reissue patent bound General Motors. But, on the infringement question, the Court (differing from the shortly-thereafter-reversed approach of the Chicago District Court) held summary judgment to be inappropriate. *Devex Corporation, et al. v. General Motors Corporation*, 263 F.Supp. 17 (D. Del. 1967).

Validity having been resolved, and infringement not being susceptible of summary disposition, a trial on the infringement issue was held before Judge Wright. The result was a determination that defendant had not infringed the Henricks patent.* *Devex Corporation v. General Motors Corporation*,

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* Pre-trial skirmishes gave birth to two additional reported decisions: *Devex Corporation, et al. v. General Motors Corporation*, 275 F.Supp. 310 (D. Del. 1967), sustaining defendant's objections to plaintiffs' overbroad interrogatories, and *Devex Corporatoin, et al. v. General Motors Corporation*, 285 F. Supp. 109 (D. Del. 1968), granting plaintiffs' motion to amend their complaint so as to assert the doctrine of equivalents.

316 F.Supp. 1376 (D. Del. 1970). Plaintiffs appealed. And the Court of Appeals reversed, concluding that the District Court had erred as a matter of law in failing to find that defendant had infringed the patent in suit. *Devex Corporation, et al. v. General Motors Corporation*, 467 F.2d 257 (3d Cir. 1972), *cert. den.*, 411 U.S. 973 (1973).

On remand, on March 15, 1974 Judge Wright appointed the undersigned as special master to resolve the issues remaining between the parties in the accounting phase of the litigation. Discovery proceeded, and included dozens of depositions, hundreds of interrogatories and answers, and thousands of pages of document production. Where controversies developed between the parties, they were resolved by the special master.*

The trial began October 30, 1978, and concluded February 14, 1979. It consumed fifty-three trial days, and generated hundreds of exhibits. The last brief, filed in accordance with a schedule settled between the parties, was submitted August 15, 1979. Oral argument was held November 14, 1979.

And, seminally, this is the special master's Report.**

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* In the years since the order of reference, none of the special master's decisions have been appealed. Hence, the Court will be looking at all aspects of the accounting phase of the case with a fresh eye when it reviews this Report.

** If there is a sigh in this sentence, it stems from the reminder of mortality which the long duration of this controversy has produced. On February 4, 1977, George Hibbens, Esquire, one of defendant's counsel, passed away. Walter Blenko, Esquire, a principal advocate for plaintiffs, expired in November, 1978. Although both sides continued to be represented by counsel of the highest quality, the loss of these singularly able, and gentlemanly lawyers, caused sadness to all involved in the case.

B. Design of the Decision

The character of the controversies here is such that to restrict the exposition of the decision-making process to numbered paragraphs would be to leave it choppy and disjointed. I have, therefore, elected to frame the decision in narrative form, *cf. Ass'n of Westinghouse Employees v. Westinghouse Corp.*, 283 F.2d 93 (3d Cir. 1960), hoping that this style will make for a smoother, and therefore, more understandable flow.

Style to one side, my aim has been to produce a decision which is understandable, subject to meaningful review, and therefore likely to advance the final denouement of this twenty-odd year old judicial drama. Toward that purpose a strong effort has been made to fairly come to grips with the major contentions advanced by each side. The record is heavy. The parties' post-trial presentations by themselves consist of perhaps a thousand pages of briefs, proposed findings, comments, and computations. While I have not explicitly dealt with each of the very large number of contentions made by the parties, most have been treated with in the decision and none has been ignored in the deliberations leading to it.

II. INFRINGEMENT

A. Law of the Case

1. It is the Law of the Case that Each of the Three Prior Trial Practices Infringe

Plaintiffs accuse sixty-one separate practices which were employed at various of General Motors, divisions as infringing the patent in suit. Three of these practices were *sub judice* before Judge Wright, and later before the Court of Appeals for the Third Circuit in the earlier infringement cases. What the Third Circuit decided provides controlling guidance on

the infringement question here. Not atypically the parties are at odds on the Third Circuit's adjudication.

The background of the "law of the case" controversy may be described in this way. Claim 4 of the Henricks patent teaches a process for the lubrication of metals before cold forming, and covers:

> "The process of working ferrous metal which comprises forming on the surface of the metal a phosphate coating and superimposing thereon a fixed film of a composition comprising of solid meltable organic binding material containing distributed therethrough a solid inorganic compound meltable at a temperature below the melting point of the ferrous metal phosphate of said coating and having a hardness not exceeding 5 on the Mohs' hardness scale, and thereafter deforming the metal." (Princ. Doc., Tab 1, p. 18.)

The "organic binding material" contemplated by the patent is soap. The "inorganic compound" is borax, or some other inorganic substance meeting the patent's claims and performing the same function as does the borax.

In holding the patent invalid, Judge Robson adverted to the indefiniteness of Claim 4 in that it did not specify " . . . the amounts and proportions of the compounds . . ." (Princ. Doc., Tab 2, p. 260). One of the lubricants before Judge Robson was Bonderlube ("BL") 235, a material produced by a company then known as Parker Rustproof Company. BL 235 is described by Judge Robson as containing about three per cent borax (*Id.*, p. 221).

The Seventh Circuit, in reversing Judge Robson and validating the patent, held the absence of quantitative borax-content measures not to be fatal. *Devex Corporation v. General Motors Corporation*, 321 F.2d 234 (7th Cir. 1963). It

reached this conclusion although the BL 235 lubricant had a much smaller borax content (three per cent) than was suggested by Example XIX (at least fifty-eight per cent borax and boric acid), and Example XX (eighty-five per cent borax) found at column 15 of the patent (Princ. Doc., Tab 1, p. 15).

When the General Motors case was transferred from Illinois to Delaware for trial on the infringement issue, three accused practices or processes were presented to Judge Wright (APTO, App. I, p. 26). The first was used by Pontiac for the formation of bumpers, and involved the use of phosphate over Parker's BL 246, a lubricant with a fifteen per cent borax content. The other two processes entailed the use of BL 235 (described as containing three per cent borax as Judge Robson had earlier noted, along with two per cent sodium nitrite and ninety-five per cent soap), and were employed in the making of valve lifter plungers at defendant's Diesel Equipment Division and the making of rocket parts at Pontiac (316 F.Supp. at 1380-1383). Judge Wright held that none of the three processess infringed (316 F.Supp. at 1390). The Court of Appeals reversed (467 F.2d 257).

In its opinion the Third Circuit devoted specific attention to the accused Pontiac BL 246 process. Defendant urges that the reversal was restricted to that process, and that Judge Wright's non-infrigement findings as to the two BL 235 practices were either left undisturbed, or that it was the intent of the Third Circuit to keep the slate clean for fresh consideration on remand as to the BL 235 practices. Plaintiffs argue that all three practices were before the District Court, and came before the Court of Appeals by their appeal of the judgment below.

Thus is the issue joined. While only one of many issues between the parties, it is the first because its disposition will provide controlling guidance as to whether the many other BL 235 (and like-BL 235) processes accused here infringe.

I conclude that plaintiffs are correct, and that the Court of Appeals did adjudicate the infringement of the prior trial BL 235 processes. Most simply put, the Third Circuit had before it a judgment which contained a finding of non-infringement as to all three processes, and held "The judgment will be reversed" (467 F.2d at 262). What was regarded by the trial court to be non-infringing was therefore held by the Third Circuit to be infringing.

Nothing in the Third Circuit's decision implies that the Court wished to regard the BL 235 processes separately or differently from BL 246 which undisputedly was found to be infringing. For example, no distinctions between the two lubricants are drawn by the decision, such as would support the view that as to one the Court intended to reverse and as to the other it did not. Further, while mainly discussing BL 246, the Opinion in its very first sentence refers to the District Court's holding as involving a process used by General Motors to facilitate "... the fashioning of metal into automobile bumpers *and other manufacturers.*" (Emphasis added. 467 F.2d at 257-258.) The only "other manufactures" before the Court of Appeals were the two BL 235 processes.

While the discussion could stop at this point, the importance of the issue and the argumentative energy which defendant has devoted to it have impelled a closer look at the appellate papers to assure that they are consistent with what appears to be clear adjudicating language in the Court of Appeals Opinion. They are.

In its brief on appeal to the Third Circuit, defendant repeatedly made reference to the BL 235 process. See *e.g.*, General Motors brief at pages 11, 28, 31, and 34. Indeed, a reading of defendant's brief inspires a sense of deja' vu, since defendant advanced in the Court of Appeals the same contentions which it repeats now toward the point that its BL 235 processes did not infringe.

Following the Third Circuit's decisions, defendant filed a petition for rehearing. One cannot read that petition without acquiring the conviction that defendant itself *knew* the decision applied to both the BL 246 and BL 235 processes. Both are explicitly referred to in the petition (see, *e.g.*, Pet. For Reh., pp. 4, 5, 6). And, tellingly, defendant, for reasons best known to it, did not urge the Court to change, or as defendant would suggest "clarify", its decision to make it apply only to the BL 246 process. To the contrary, cleaning tests on BL 235 samples were described, and defendant only urged the Court to give the tests of defendant's witnesses "greater consideration" (*Id.*, p. 5). The Court was invited to recognize (as am I) that the "no cleaning problem" provision in the pretrial order cited in the opinion as "[t]he most important single item" (467 F.2d at 261) related to the Bl 246 process and not the Bl 235 process (Pet. for Reh., p. 6). The Court of Appeals declined to in any way adjust its decision in response to defendant's imprecations.

In its petition for certiorari to the United States Supreme Court defendant made no distinction between the BL 246 process which it concedes the Third Circuit intended to hold as infringing, and the BL 235 processes which it now says were left open by the Court of Appeals' decision. Again the petition dealt with all three processes. After describing the District Court's findings with respect to the BL 235 and BL 246 accused practices (Pet. for cert., p. 8, particularly fn. 23), defendant characterized the holding of the Court of Appeals thusly:

> "In effect, the Third Circuit ruled that where a process patent is given limited validity by a holding based solely on coaction not described in the claim, and to which the claim is not limited, the patentee may nevertheless enforce its patent monopoly against other processes within the claim's unspecific language, even where such coaction has not been shown to occur." *Id.*, p. 10.

The "other processes", as to which the Third Circuit is suggested to have erroneously ruled, appear from the context of the petition for certiorari to be the accused BL 235 processes as well as the BL 246 process. Nowhere in its petition did defendant suggest that the only process passed on by the Court of Appeals, and therefore subject to review by the Supreme Court, was the BL 246 process.

Finally defendant did not apply for a special form of mandate separating out the BL 235 uses from the BL 246 practice, as was its right (FRAP 36, 41). The mandate as actually entered " . . . reversed as to that portion of the said [District Court] judgment which held that the defendant had not infringed Claim 4 of the Reissue Patent No. 24,017, which holding is the subject of the principal appeal herein . . ."

That defendant should not have moved for a special form of mandate is consistent with what seems to me to be its clear recognition that the Court of Appeals intended to hold all three processes before it as infringing. The mandate as entered puts the final nail in the coffin of defendant's law-of-the-case argument.

But, argues defendant, there are nevertheless differences between the characteristics of BL 235 and BL 246 which can be taken into account now to hold the latter non-infringing even though the Court of Appeals may have concluded otherwise. I do not find that the cases on which defendant relies support that conclusion.

Imperial Chemical Industries v. National Distillers and Chemical Corp., 354 F.2d 459 (2d Cir. 1965), is cited by defendant as "especially in point" toward the proposition that there remains latitude to argue that the BL 235 prior trial practice did not and does not infringe. In *ICI*, a trade secret case, the trial court originally denied plaintiff a preliminary injunction, and the Court of Appeals reversed and remanded.

See 342 F.2d 737 (2d Cir. 1965). On remand interlocutory relief was again refused, this time because the trial court corrected a finding which it had made prior to the first appeal. Again plaintiff appealed. This time the Second Circuit declined to reverse, and in so doing, it emphasized two factors which are not present here. First, in *ICI* the trial court itself found it had been in error and corrected the error. In the case at bar the Court of Appeals found the trial court in error, and by its mandate of reversal the Court of Appeals corrected the lower court's error. What defendant seeks in this case is for me to in effect find the Third Circuit in error and reinstate Judge Wright's findings. Neither *ICI* nor any other authority permits that result. Second, in *ICI* the trial court's findings were themselves only tentative because " . . . the findings of fact made upon the motion for preliminary injunction are not controlling . . ." (354 F.2d at 463). See also, 1B *Moore's Federal Practice,* ¶ 404[10], p. 572. Here, in contrast, the prior trial accused practices were *sub judice* before the Third Circuit on appeal from definitive *post-trial* findings upon which a final judgment on the infringement issue rested. The Court of Appeals' judgment, as to which certiorari was sought and denied, was final with respect to all findings and conclusions which were before the Court.

Defendant also relies upon *Aro Manufacturing Co., Inc. v. Convertible Top Replacement Co., Inc.*, 377 U.S. 476 (1964), which affirmed in part and reversed in part a decision at 312 F.2d 52 (1st Cir. 1952). An earlier installment of the *Aro* litigation ("*Aro* I") (365 U.S. 336 (1961), *reh. den.*, 365 U.S. 890 (1961)) had resulted in a holding that replacement fabric auto convertible tops sold for use on vehicles manufactured by General Motors, a licensee under the patent in suit, were permissible "repair". The Supreme Court concluded that by purchasing and furnishing the replacement fabric, GM customers and the manufacturer, respectively, were not direct or contributory infringers. In a subsequent *Aro* case

("*Aro* II"), the District Court interpreted the earlier Supreme Court decision to mean that replacement fabrics for vehicles produced by an unlicensed manufacturer (Ford) were similarly immune from claim by the patentee. The Court of Appeals concluded that the Supreme Court had intended its exculpatory decision to apply only to vehicles which were manufactured under license (312 F.2d 52). On certiorari the Supreme Court agreed (377 U.S. 476). Both *Aro* II opinions carefully review the logic and language of the *Aro* I decision, leaving no doubt that the Supreme Court had intended to limit that decision. Here, by contrast, logic and analysis compel the conclusion that the Third Circuit did not intend to limit its decision, but rather intended its reversal to apply to all three alleged infringements which had been placed before it for review.

Defendant also adverts to *Standard Oil Company of California v. United States,* 429 U.S. 17 (1976). That case held that the district court had the power to open a judgment under F.R.C.P. 60(b) without seeking leave of the appellate court which affirmed it. Neither the holding, nor the brief discussion which supports it, have the slightest connection with the law-of-the-case issue here.

The other cases cited, but not much discussed by defendant are similarly unpersuasive.

The governing law-of-the-case principle is (quoting from *Re Sanford Ford & Tool Co.,* 160 U.S. 247, 255) as announced in *In re Potts,* 166 U.S. 263, 266 (1897):

> "When a case has been once decided by this court on appeal, and remanded to the circuit court, whatever was before this court, and disposed of by its decree, is considered as finally settled. The circuit court is bound by the decree as the law of the case; and must carry it into execution according to

> the mandate. That court cannot vary it, or examine it, for any other purpose than execution; or give any other or further relief; or review it, even for apparent error, upon any matter decided on appeal; or intermeddle with it further than to settle so much as has been remanded. . . ."

The task on remand is to play the ball as it lies. There can be no rolling over to give one side or the other a better shot. Here that means acceptance by me as master of the no-longer-disputable premise that the prior trial accused processes using BL 235 as well as BL 246 are infringing. It follows as a matter of law that any other accused practices which operate in substantially the same way as those prior trial practices, and which produce substantially the same results must also be found to infringe. *Flat Slab Patents Co. v. Turner*, 285 F. 257, 273 (8th Cir. 1922). See, dealing with the analogously applicable doctrine of equivalents, *Graver Tank & Mfg. Co. v. Linde Air Products Co.*, 339 U.S. 605, 608 (1950).

2. It is the Law of the Case that Cleanability in a Routine, Commercially Acceptable Way Satisfies the "Cleanability" Requirement of the Patent

The decisions touching the patent require that the user achieve "easy cleanability". For the reasons which follow, I find that this requirement is satisfied by any accused process which permits cleaning to be done in a routine, commercially acceptable way.

In its second review of the Henricks patent in the *Houdaille* case, *Devex Corporation v. Houdaille Industries, Inc.*, 382 F.2d 17 (7th Cir. 1967), the Seventh Circuit made it plain that plaintiffs could not prove infringement based solely upon a literal reading of Claim 4 of the patent. They had to prove, in addition, that by following the Henricks' teaching a "new and

unexpected result" ensued (383 F.2d at 23). But for this requirement, the Court strongly implied, the patent would not have survived attack since " . . . such a [literal] construction would monopolize the whole broad field of metal forming with any use of dry soap and borax over phosphate at any temperature or pressure, regardless of results." (*Ibid.*)

Following the decision of the Seventh Circuit, Judge Wright found that the BL 235 and BL 246 processes literally tracked the teachings of Claim 4, but held that they did not infringe because they did not achieve the new and unexpected results promised by the patent as construed. In reversing, the Third Circuit swept aside arguments as to *how* the results were achieved, and held that it was sufficient for plaintiff to prove that the accused process achieved "easy cleanability" in conjunction with "satisfactory lubricity" (467 F.2d at 261).*

The Third Circuit in its decision further illuminated the cleanability requirement by referring to a "no cleaning problem" stipulation as meeting the requirement in BL 246 Pontiac bumper practice. The stipulation was a part of the pretrial order in the infringement case (APTO, App. I, p. 10). Defendant has sought to limit it, believing that without the stipulation it would have been exonerated of infringement.

But I think the "no cleaning problem" stipulation gave away nothing. For what the stipulation meant, and what it

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* *Eutectic Corp. v. Metco, Inc.*, 579 F.2d 1 (2d Cir. 1978), involved patents for a flame spray device designed to cause a self-bonding coat to be affixed to metal surfaces. Citing the Third Circuit's *Devex* decision, the Court held it of no legal consequence that the reactions giving rise to the desired results were even different from those the patentee had reported.

was taken to mean, is that metal coated in the way taught by the patent could be cleaned in a routine, commercially acceptable way.

The record of the prior trial made it crystal clear that Pontiac bumpers required multi-step post-forming preparation prior to electroplating. See, *e.g.*, the cleaning procedures described in Judge Wright's decision (316 F.Supp. at 1381). The Court of Appeals was not ignorant of this. The clear purport of the Court of Appeals' ruling is that the need for cleaning did not vitiate the application of the patent. To the contrary, it vitalized the patent so long as the cleaning could be done in the regular course of production.

This conclusion is consistent with (what I have found to be) the Third Circuit's holding that BL 235 processes also infringed. The prior trial valve lift plungers were cleaned after forming in a drum washer with a mild acid spray for 2-3 minutes (316 F.Supp. at 1382) and the rocket parts were cleaned in a strong alkaline cleaner (316 F.Supp. at 1389). Again it was enough that cleaning could be accomplished in a commercially routine way.

While finding it to be the law of the case that it is enough to prove commercial cleanability (as in the prior trial bumper use of BL 246 and non-bumper lubrication with BL 235) the cleanability point should not be left without giving recognition to an argument which the defendant has strongly, and not unpersuasively, urged. Defendant's argument can be stated thusly: In sustaining the validity of the patent, the Seventh Circuit found it advantageous, cleanability-wise, by comparing the patent with the so-called "German process" which involved a coating of soap-only over borax over the workpiece accompanied by a long soaking period. It found that the German process had a "serious defect in . . . that the residual deposit was not water soluble and presented a difficult cleaning problem especially if the workpiece was to be

electroplated" (321 F.2d at 236). The Seventh Circuit relied upon plaintiffs' argument that the "difficult cleaning problem" was ameliorated because the patented process formed "amorphous glassy materials" and with the further result that "the formation of insoluble organic materials is inhibited and there is no cleaning problem" (*Id.* at 236-237). The Seventh Circuit emphasized this unexpected result in its opinion in the second *Devex* case (382 F.2d at 22-23).

Defendant urges that in fact the selfsame water insoluble substance produced by the German process is produced by the accused BL 235-type processes. It submits that its items of manufacture, particularly those produced by processes like the prior trial BL 235 processes, are neither less nor more difficult to clean than was the case under the German process. It urges that plaintiffs have failed to prove that the accused borax-containing lubricants create more cleaning difficulties than would have been the case were the borax omitted. Defendant concludes, therefore, that these processes cannot be held to infringe.

This is not a frivolous argument. It was evidently persuasive to Judge Wright, whose decision finding non-infringement cited evidence showing that zinc stearate (the difficult-to-clean substance deposited by the German process) also appeared when defendant practiced the accused patented processes. *E.g.*, Findings 12(a), (c), (d), (e), (f), (g), (h), (i), (j), (l), and 13 (316 F.Supp. at 1386-1389). And the argument was again ably made to the Third Circuit in defendant's effort to secure an affirmance of the District Court's non-infringement findings. Indeed, an examination of its brief on appeal and its motion for reargument makes it plain that the bulk of defendant's presentation on review was devoted to the proposition that plaintiffs had not shown that the patented process resulted in a cold-formed piece easier to clean that would have resulted under the pre-patent German process.

Were I writing on a clean slate I might (or might not) reach the same conclusion as did Judge Wright. But I am not. The Third Circuit has adjudicated (as I have found) that the prior trial BL 246 and BL 235 processes infringe. By so finding, it can only have intended to compare the success of the routine ("simple and easy") commercial cleaning steps used in the prior GM trial practices with the "difficult cleaning problem" postulated as the principal vice of the German process. It is that comparison which the Court found was "[t]he relevant comparison" (467 F.2d at 261).

To go at it a different way, defendant argued long and hard to the Third Circuit that Judge Wright was correct in holding that the prior trial practices (the BL 235 *and* BL 246 processes) produced the same water insoluble zinc stearate formed in the German process. (*E.g.*, Defendant's Brief to the Third Circuit, pp. 30-32). The Court of Appeals found it unneccessary to assay the chemical correctness of defendant's contention. Rather it emphasized that the accused practices accomplished the needed cleaning job with no problem, which I take to mean in a routine, commercial way. If it is assumed that the German process could not be cleaned except with extraordinary effort, the logic of this approach is self-evident.

But logical or not, the zinc stearate battle fought before Judge Wright and in the Third Circuit is now over. The special master's marching orders are to find as infringing those practices which (in addition to the other patent requirements) have the same routine, commercial cleanability characteristics as the prior trial practices. And that is the approach which will be followed.

3. It is the Law of the Case that Lubricity Sufficient to Achieve Effective Production Satisfies the "Satisfactory Lubricity" Requirement of the Patent

In addition to routine, commercial cleanability, the decisions touching the patent require that the user achieve "satisfactory lubricity" (*e.g.*, 467 F.2d at 261).

At the trial of this cause the parties devoted a very large amount of energy toward laboratory proofs of the effect of borax and other inorganic substances on lubricity. Plaintiffs offered as an expert Professor Ernest Rabinowicz, of the Massachusetts Institute of Technology, toward the point that in pin-on-metal tests the addition of borax and equivalents tended to reduce the coefficient of friction of the steel to which it was applied. Defendant supplied Professor Kenneth Ludema, of the University of Michigan, whose laboratory tests, using a somewhat different pin-on metal device, generated results diverging by a large degree from those reached by Dr. Rabinowicz.

Predictably, each side probes the tests of the other in an effort to expose the errors which led to what it sees as mistaken conclusions. Plaintiffs assail the alleged inexperience of defendant's personnel in preparing test samples, Dr. Ludema's supposed failure to have checked his results for internal consistency or drift, the manner in which the cantilever was attached to the Ludema machine, the manner in which Ludema accounted for the stick-slip phenomenon, and out-of-control results statistically arguable as to some of Dr. Ludema's tests. For its part, defendant attacks the Rabinowicz friction machine, the top limit of 252° C. reached by plaintiffs' tests, the many allegedly subjective adjustments Dr. Rabinowicz felt himself obliged to make to his test results, the supposed lack of repeatability of the Rabinowicz results,

the fact that the Rabinowicz tests were made with foreknowledge of what was being tested rather than in the blind, etc.

While the record does permit a decision on the question of which set of lubricants was more slippery in the pin-on-metal tests, in the context of the controversies here that is an unnecessary exercise.* For if arguments among chemists were thought by the Court of Appeals to be unimportant in the cleanability context (467 F.2d at 261), they are of even less use in resolving the issue of whether the accused practices achieve satisfactory lubricity.

Judge Wright found from the record as a whole in the prior infringement trial that " . . . defendant's processes are effective, beneficial and an improvement over earlier solutions to their lubricating problems . . ." (316 F.Supp. at 1378). The Court of Appeals observed that the record supported ("properly found") this conclusion (467 F.2d at 260).

The central inquiry here is not which expert in the antiseptic environment of a laboratory would be most likely to accurately predict whether a particular lubricant will or will not achieve satisfactory lubricity. Lubrication tests in a

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* In other phases of the case findings are made although not strictly necessary to the conclusion reached so as to try to make a record which will avoid the need for remand if there is found to be error in any particular. In the matter of the lubricity tests I should say that I am not in doubt as to which of the two experts, by reason of experience and the reasoning underlying his views, I would trust were I to embark on a commercial venture in which laboratory information as to the slipperiness of metal variously coated. But although a choice could be made between the experts as to which set of tests to credit, it is clear that each was sincere and forthcoming, and believed in the reliability of his experiments. Under such circumstances it seems to me a gratuitously hurtful exercise to resolve what I have concluded to be an immaterial controversy.

laboratory are at best an imperfect barometer of what production experience is likely to show. It is how the lubricant works in the production process that is the true test.* I find that borax-containing lubricants would not have been used in actual production if defendant did not believe they worked satisfactorily.

Respecting this conclusion, defendant's references to instances in which borax-containing lubricants did *not* work are of interest:

> "Pontiac tried Pennsalt Drawcote 1044 on its production equipment. Tr 5018 (Herrmann); Def. Ex. A-28-2. This lubricant contained 74 percent borax and 25 percent sodium tallow soap. Def. Ex. A-25, Pennsalt tab, p. 3. The work so lubricated was broken in the test, and Pontiac did not use such lubricant in production. Def. Proposed Finding Tr D-5.
>
> "A decade later, Pontiac had trouble with Great Lakes Steel lubricated by Production Finishing with

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* At oral argument, defendant's counsel stated: "As I read the Court of Appeals decision at least, it seems to me that the Court is saying that if you use it and don't have troubles, that is satisfactory lubricity." (Tr., p. 68 of oral argument held November 14, 1979.)

Plaintiffs put it most succinctly in their brief to the Third Circuit: "The practical man in the shop doesn't care about theories, he looks to results." (DX A-22, Third Cir. Br., p. 19.) Defendant, after making its criticisms of the Rabinowicz tests, made the point " . . . that none of the laboratory tests can do more than confirm production experience and provide some indication of why production observations occurred." (Defendant's Comments on Plaintiffs' Proposed Fact Findings 75-110, p. 28.) Both sides appear to agree that coefficient of friction, which was all the laboratory tests were designed to measure, is not necessarily controlling in lubrication selection (Wojtowicz, Tr. 5723; Herrmann, Tr. 5018).

> Bruko D-122 (PF888), then 50 percent borax, 45 percent sodium tallow soap. Def. Ex. A-25, Bruce tab, pp. 2-3. The cure, as Pontiac found out, was to get rid of the borax, which was done. The resultant Bruko 27 soap-only lubricant worked fine and is still in use. Tr 6108-17 (Kopchick); Def. Proposed Finding No. D-4; Def. Ex. A-25, Bruce tab, pp. 1-2." (Defendant's Comment on Plaintiffs' Proposed Fact Findings 75-110, p. 3.)

From this defendant urges that the inference be drawn that borax in practice was an inferior lubricant. But the truth that emerges from defendant's example is not that borax in a lubricant made it *universally* less satisfactory. Rather it is that borax in a lubricant *on occasion* was unsatisfactory. The evidence shows that where borax-based lubricants were unsatisfactory, they were replaced. The correlative truth must be that where borax-containing lubricants were retained, or were substituted for lubricants not containing borax, it was because they did the job better. That is the inference toward which the evidence propels me.

Accordingly, I find that it is the law of the case that borax-based lubricants selected for and used in actual production met the "satisfactory lubricity" requirement of the patent and the Circuit Court decisions construing it.

B. Accused Practices Held to be Infringing

1. Accused Practices Which Must Be Held to Infringe as the Result of the Law of the Case (Bumper-Accused Practices 4, 5, 12, 13, 36, 48, 49, and 51; Non-Bumper-Accused Practices 7, 9, 16, 17, 22, 25 (in part), 26, 27, 28, 30, 31, 37, 38, 42, 47, 54, and 56)

Those practices which respond literally to Claim 4 and "achieve easy cleanability in conjunction with satisfactory lubricity" (467 F.2d at 261) comparable to the prior trial practices, must be held to infringe. On this basis I find as infringing, in addition to the already adjudicated prior trial bumper practice, the following bumper practices:

Accused Practices 4 and 5	Cadillac's use of BL 246, 247, 247A or 249 (all soap and borax) during the 1959 and 1962 model years and thereafter (APTO, CAD:1)
Accused Practices 12 and 13	Chevrolet Livonia's use of Kearns 3833 and Pennwalt 1047 (both soap and borax) during the period 1958-1965 (APTO, CL:1)
Accused Practice 36	Fisher Body's use of Bruko D-122, Kearns DF-4800, or Pennwalt Drawcote 1044 (all soap and borax) from 1957-1960 (APTO, FBC:1)
Accused Practices 48, 49, and 51	Pontiac's use of BL 246 (the prior trial lubricant but for bumper parts) from 1955-1959, and BL PTD 1239A and BL 249A (soap and borax) from late 1958-1963 (APTO, P:2)

Without trying to describe them because they are numerous, varied and fully detailed in the pretrial order, I find that the following practices for the cold-forming of non-bumper parts are literally within the Henricks claim, and

produce the same combination of lubricity and cleanability characteristic of the prior trial BL 235 valve lifter and rocket practices: Accused Practice 7, APTO, CBC:1; Accused Practice 9, APTO, CD:1, Accused Practice 16, APTO, CP:1; Accused Practice 17, APTO, CP:1;* Accused Practice 22, APTO, DE:1; Accused Practice 25 (in part,** APTO, DP:1; Accused Practice 26, APTO, DR:1; Accused Practice 27, APTO, DR:1; Accused Practice 28, APTO, DR:1; Accused Practice 30, APTO, DR:2; Accused Practice 31, APTO, DR:2; Accused Practice 37, APTO, ID:1; Accused Practice 38, APTO, ID:1; Accused Practice 42, APTO, 0:1; Accused Practice 47, APTO, P:1; Accused Practice 54, APTO. SSG:1; Accused Practice 56, APTO, SSG:1.

2. TKPP is a Borax Equivalent, and the Use of it by Defendant as a Borax Substitute in Bumper Making Infringes (Accused practices 6, 14, 50, 52, and 53). TSP is also a Borax Equivalent.

(a) TKPP

By way of background, prior to the original infringement trial defendant moved to amend its complaint, which

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* Accused Practice 17 is included in a distinctive grouping by plaintiffs because molybdenum disulfide was a part of the lubricating process, although it is not claimed that use of that substance read on the patent. I should note that, while convenient for some purposes, the view I take of the infringement issues has been such as to make it inconvenient, and sometimes confusing, to follow plaintiffs' groupings. Hence I have attended upon their suggested categorizations in the reaching of the various decisions in this report, but do not separately advert to them in the writing of it.

** Accused Practice 25 involved the production of piston rods, studs and rings. For the reasons set forth at pages - , *infra*, the portion of the practice devoted to the production of piston rods has been held to be non-infringing. See particularly first footnote on page

theretofore accused only borax-containing lubricants, to include non-borax equivalents. The amendment was allowed by Judge Wright, *Devex Corporation v. General Motors Corporation*, 285 F. Supp. 109 (D. Del. 1968), and a new complaint charging infringement by the use of borax substitutes was filed. See amended complaint, Princ. Doc., Tab 8d, ¶ 6.

The five accused bumper-making practices now to be considered involve the use of tetrapotassium pyrophosphate (TKPP) in the soap-based coating. In addition to the defenses common to all charges (no proof of better lubricity, cleanability, etc.), General Motors defends against the "TKPP" charges with the contention that there is no infringement because the melting point of TKPP is, contrary to the requirement of Claim 4, not " . . . below the melting point of the ferrous metal phosphate of said [the lubricant] coating."

I view the question of whether the use of TKPP infringes to be of substantial importance. TKPP came to be used in bumper production, where I believe the Henricks invention had its major utility. It was introduced after the patent was held valid, in an attempt to avoid infringement by adding to the then used soap composition an inorganic substitute for the borax it previously contained.

The pattern is clear.

Accused Practice 6 came to be used at Cadillac in 1964 and afterwards and involved the use of Bonderlube 201 or 202 (25% TKPP) over phosphate. It was the successor to Infringing Practice 5 which involved Bonderlube 247 and 247A (46-50% borax), or Bonderlube 249 (30% borax) (APTO, CAD:1-5).

Accused Practice 14 substituted Bonderlube 200 or 200A (20-25% TKPP) for the Kearns 3833 (45% borax) in Infringing Practice 12 at Chevrolet Livonia. The change came in early 1965 (APTO, CL:1-9).

Accused Practices 50, 52 and 53 used Bonderlube 200, 200A, 201, or 202 for bumper making at Pontiac and were the successors to a series of practices beginning with the prior trial bumper practice and ending with Infringing Practice 51 which had used Bonderlube 249A (30% borax). The TKPP use at Pontiac began with Accused Practice 52 about September 1963 (APTO, P:1-3, 6-17).

There is no evidence that TKPP was used for any purpose other than as an integral part of the soap lubricant application. TKPP was put in as a borax substitute, to help the soap do the job of efficiently lubricating the workpiece. That is why the question of whether substitution of TKPP for borax avoids infringement in the five accused processes under consideration is of more than passing significance. If the use of soap with TKPP were held not to infringe, defendant would not only have defeated the attempt to charge the five accused TKPP processes. It would have established that, at least by late 1963, another non-infringing alternative was available in the bumper area. On the other hand, if the use of TKPP as a borax equivalent infringes, it will be deducible that defendant could not readily avoid the patent's claims despite its recognition of their validity and its effort to find a non-infringing alternative.

It may be thought the question of whether TKPP in defendant's use was meltable at below the melting point of the ferrous metal phosphate of the coating is susceptible of a quick, easy answer to a scientific certainty. It has not proved to be so. Like the lawyers for both sides who have asked them the questions, the well-credentialed scientists called by the parties have differed on the melting point question.

For its part defendant points out that the handbook melting point of "ferrous [metal] phosphate" adverted to in the Henricks patent is 1050° C. (Princ. Doc., Tab 1, Col. 9, Line 9 of Table 1). The handbook melting point of anhydrous

TKPP is 1109° C.* Ergo, concludes defendant, TKPP is not meltable below the melting point of the ferrous metal phosphate, and its use does not preempt the patentee's rights. Plaintiffs reply that despite what the handbooks say about the melting point of anhydrous TKPP, in practice the TKPP in the coatings as applied by defendant would melt before the ferrous metal phosphate.

I think plaintiffs have the better of the argument.

The patent does not speak of the melting point of ferrous metal phosphate in a crucible. Claim 4 adverts to "the ferrous metal phosphate of said coating." *In situ* that would be close

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* While anhydrous TKPP's melting point is 1109° C. (Van Wazer, Tr. 4680-4681), hydrated TKPP has a handbook melting point of 180° C. (Othmer, Tr. 766-768; DX A-20, p. 256). A distinguished expert witness for plaintiff testified that the aqueous character of the coating recipe for the application of the TKPP would cause it to become hydrated (Othmer, Tr. 868, 869, 873-876). On the other side an expert witness for defendant testified based on x-ray patterns that, despite the seeming logic of the view of plaintiffs' expert, in fact the TKPP in defendant's coatings was not hydrated (Van Wazer, Tr. 4657-4670; DX A-24-4). Plaintiffs counter that x-ray tests detect crystal structures (Van Wazer, Tr. 4751-4752), but would be ineffective respecting the coatings here since, plaintiffs say, they are amorphous (Friedberg, App. 4, 1637-1638). Indication of loss of water vapor at relatively low temperatures in thermo-metric tests (DX A-31, p. 8; see also Van Wazer, Tr. 4657-4670), tends to support plaintiffs. If the TKPP in the coating were hydrated, the waters of hydration (or crystallization) would migrate from the chemical at 180° C. (Othmer, Tr. 766-768). Plaintiffs argue that the melting point of the hydrated compound is the melting point of the TKPP within the meaning of the patent. Its expert supported this point of view (Othmer, Tr. 737-745), and so does the chemical handbook (DX A-20, p. 256). Whether the TKPP as applied was hydrated, and whether the temperature level at which it would lose its waters of hydration is its melting point, are questions I need not decide since, in the view I take of it, plaintiffs must prevail even if the TKPP as applied were anhydrous.

to the melting point of the steel coated by the phosphate (Othmer, Tr. 747, 793-812, 825-828; PX A-73a), or in the area of 1525° C. (Friedberg, Tr. 2849-2964); PX A-74). It follows from this that the TKPP in the coating, even if anhydrous, would be meltable at a temperature below the ferrous metal phosphate of the coating (1109° C. vs. close to 1525° C.).

Experimentally, at the infringement trial plaintiffs' expert, Mr. Friedberg, had taken a blank which had been coated with Bonderite 181X and Bonderlube 246 (15% borax) and placed it in a furnace. The temperature in the furnace was raised to 1000° C. He removed the blank from the furnace and found that all of the soap and borax had disappeared but the phosphate coating was still intact. From that test, Mr. Friedberg concluded that the borax melted before any melting of the phosphate including the zinc phosphate and the ferrous phosphate of the coating (Friedberg, App., Vol. 4,* 1572-1575; PX-79).

A similar experiment was run by Friedberg for TKPP at the accounting trial. Mr. Friedberg formed a phosphate coating on a steel panel with Bonderite 114X and coated it with Bonderlube 202, which was used in certain of the accused practices and contains 24.8 percent TKPP. He placed the panel on top of an aluminum plate provided with a thermocouple and placed the aluminum plate on an electric hot plate. He heated the assembly up to 382° C. At 93° C., the lubricant coating was liquid and boiling. It turned brown at 149° C. At 288° C. it was a darker brown and at 382° C. it was sort of bluish (Friedberg, Tr. 536-537, 545-546, 555-558, 562; PX A-61b-1). From the liquification of the lubricant mix at that temperature, Mr. Friedberg concluded that the TKPP in

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* Refers to volume of appendix filed in the appeal to the Third Circuit.

this system was completely meltable at 93° C. (200° F.). This result is the same as the result which he had obtained for the borax-containing lubricant that he tested for the infringement trial (Friedberg, Tr. 558, 562). Borax concededly fits the patent's melting point requirement.

Mr. Friedberg explained that when one mixes a first chemical compound with a second chemical compound, or with several compounds, the melting point of the pure material is changed. The mixture has a new melting point (Friedberg, Tr. 696-697). This is consistent with the testimony of defendant's expert witness, Dr. Van Wazer, who explained mixtures using a chart of a TKPP and phosphorus pentoxide mixture (DX A-24, Tab b). The melting point of pure TKPP was given as 1109° C., but the melting point of the mixture was lowered as various amounts of phosphorus pentoxide were added (Van Wazer, Tr. 4723-4725A).

I find plaintiffs' explanations persuasive. Further, I note that defendant did not introduce any evidence, apart from its handbook melting points of pure anhydrous TKPP and ferrous metal phosphate, of the melting point of TKPP in the coating itself. Nor did it offer experimental proof to show that TKPP's "meltability" in the coating diverged materially from the melting point of borax as both related to the melting point of the ferrous metal phosphate.

In reaching this conclusion I have taken note that in their case against Rockwell plaintiffs filed interrogatory answers pegging the melting point of the ferrous metal phosphate of the coating at 1050° C. (DX A-48, Item 14, P. 7 and DX A-2, Item D-3, p. 4). Defendant argues that this is a wobble, and that there has been other melting point vacillating by plaintiffs. I agree, and had the issue been closer this might have been enough to tilt the decision defendant's way. But, despite plaintiffs' positional trembles, it seems to me that the evidence shows that once the ferrous metal phosphate was bonded to

the workpiece its true melting point would be higher than the 1050° C. handbook melting point, and that, at the other end, the melting point of the TKPP in mixture with soap would be lower than the 1109° C. attributed as the melting point of the pure anhydrous substance.

But, defendant argues, what the Seventh Circuit saw as the "amorphous glass materials which contributed significantly to the lubricating value of the [borax-containing] coating" (321 F.2d 237), are not shown to be duplicated in TKPP-containing coating. While I agree that plaintiffs have not proved that TKPP behaves to produce the same materials as did borax, the Third Circuit recognized that variations were possible, and permissible.

> "Moreover, it may be that chemical reactions differed in degree, and perhaps in kind as well, in different applications of the Henricks process. . . . it is not claimed that in every Henricks mix under every temperature, chemical reaction and its products will be identical." (467 F.2d 261-262).

I conclude that the TKPP in Accused Practices 6, 14, 50, 52, and 53, as it existed in coating used by defendant, was meltable at a point below the melting point of the ferrous metal phosphate of said coating. The practices were used to accomplish the same results as the accused and infringing borax lubricated processes they replaced. That being so, and since as I have found they literally read on the patent, they are found to infringe.

(b) TSP

The use of Bonderlube 242, 242-O and 242-W, containing from 11 percent to 53 percent trisodium phosphate (TSP) is charged by plaintiffs in Accused Practices 3, 11, 15, and 45. The melting point controversy is about the same as the argument about TKPP, and I resolve it the same way.

Anhydrous TSP has a melting point of 1340° C. (Othmer, Tr. 866). Waters of hydration begin to migrate from hydrated TSP at 73.4° C., and this is its handbook melting point (Othmer, Tr. 789-790; DX A-20, p. 275). The Friedberg tests showed that the TSP in the coating system to which it was experimentally applied melted at 82° C. — 93° C., which was the same result he got for borax at the prior infringement trial (Friedberg, Tr. 546-548, 562; PX A-61b-1). Apart from its reliance on handbook references to the crucible melting point temperature of ferrous metal phosphate and anhydrous TSP, defendant offered no evidence tending to show that *in situ* the melting point of TSP was higher than the melting point of the ferrous metal phosphate of the coating.*

C. Accused Practices Held to be Non-Infringing

1. Practices as to Which Little or No Cleaning was Required do not Infringe (Accused Practices 2, 3, 10, 11, 15, 19, 20, 21, 25 (in part), 33, 34, 35, 39, 40, 41, 44, and 45)

It has emerged as a central truth that, in general, high content (15% or more) borax or equivalent lubricants are used in

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* While for completeness the literal sufficiency of TSP as an inorganic substance with a melting point within the patent's claims is here found, for reasons later explained none of the accused practices employing TSP are found to infringe. This is because where TSP is part of the lubricant (Accused Practices 3, 11, 15, and 45) cleanability is not shown (pp. 39-43, *infra*). And where as part of a rinse (Accused Practice 29), it is not shown to contribute to lubricity or cleanability (pp. 44-51, *infra*).

bumper making with relatively light phosphate coatings, and low borax content (less than 15%) lubricants are used on heavy phosphate coatings in other manufactures.

In bumpers impeccable cleaning is required to allow for unblemished plating. In processes where there is no plating, the cleaning step is less important. The prior trial BL 246 bumper process exemplifies the careful cleaning needed for bumper making (316 F. Supp. 1380-1382). The prior trial rocket and valve lifter practices (*Id.*, at 1382-1389) illustrate the much less rigorous cleaning required in many of the accused practices. As I have held, to give effect to the Third Circuit decision, accused practices in both categories must be held to infringe.

But there are a number of practices accused by plaintiffs which, unlike the prior trial practices, require either no cleaning or so little in the way of cleaning as to be insubstantial. In such cases, cleaning as such is simply not a part of the process. As to these, defendant argues that ease of cleaning is an element vital to the life of the patent, and that there can be no infringement without using that advantage.

I think defendant is correct. There can be little doubt that if the patent validity battle before the Seventh Circuit had been fought on ground involving processes requiring little or no cleaning, the patent would have been invalidated. What was found to be the happy confluence of cleanability and lubricity saved the patent from a literal construction which " . . . would monopolize the whole broad field of metal forming with any use of a dry soap and borax over phosphate at any temperature or pressure, regardless of the results" (382 F.2d at 23). The monopoly the Seventh Circuit sought to narrow would be broadly conferred were the patent extended to include uses of soap and borax resulting in improved lubricity

only. To say it another way, construing the patent to apply to all borax-content coating achieving satisfactory lubricity, regardless of whether ease of cleanability was utilized (or indeed achieved),* would be to allow plaintiffs to "monopolize the whole broad field of metal forming" in a way that was never intended.

For their part plaintiffs rely on the proposition that a user of the substance of a patented invention will not avoid infringement by failing to utilize all the benefits of the invention. While that is certainly the law, *Hobbs v. Beach*, 180 U.S. 383 (1901); *Balaban v. Polyfoto Corp.*, 47 F.Supp. 472, 480 (D. Del. 1942), that proposition does not fit the facts here. In the matter at bar, but for ease of cleaning, plaintiffs would have no invention. This is not the case of a substitute mechanism capturing the germ of the patented machine but performing less than all of its functions. See, *e.g.*, *Hobbs v. Beach, supra* at 401. Here there would be no patent if only satisfactory lubricity was the result. The invention is not soap and borax over phosphate. It is soap and borax over phosphate producing the practical result of satisfactory lubricity and cleanability.

Applying the finding that processes which involve little or no cleaning do not infringe to the accused practices here, I find as non-infringing Accused Practices 2, 15, 19, 20, 25 (in

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* Whether those parts not actually cleaned could have been cleaned in an easy commercial way is an open question. While plaintiffs offered laboratory proof on the subject (Friedberg, Tr. 482-522), to accept those proofs in place of actual production experience would be a departure from the course followed in adjudicating lubricity.

part,* 33-35,**, 39,*** 40, and 41, all of which require no chemical cleaning (APTO, BM:5, CP:12, CT:5, DP:9-10, FBC:1, 14-15, ID:10-11, NDH:4, 6).

I further find as non-infringing Accused Practices 3, 10, 11, 21, 44, and 45, which are heat-treated with the result that any surface detritus would be removed, including even the residue which it has been postulated would have been left had the German process been employed (APTO, BM:6-8, CDF:1-6, CTF:1-5, O:27-31).****

A separate word should be said about the accused practices involving TSP in the lubricant.

Although TSP has been found to qualify as an inorganic substance falling literally within Claim 4 (pp. 37-38, *supra*), its contribution to the cleanability claimed by the patent is nil. TSP-containing Bonderlube 242-O was used to make axle shafts at Buick (Accused Practice 3), and Oldsmobile (Accus-

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* The portion of Accused Practice 25 involving the production of one-inch piston rods required no cleaning (APTO, DP:9-10).

** Accused Practices 33, 34, and 35 involved cold heading window regulator bearing studs and door lock striker pins, with oil being applied along the line. The only cleaning done was by a vapor degreasing step, with the door lock striker pins produced by Accused Practices 33 and 35 also requiring heat treating (APTO, FBC:1, FBC:14-15). Compare Accused Practice 32, which involved the application of oil during cold forming, and therefore required degreasing, but which also utilized prior trial cleaning steps (APTO,DE:6).

*** The accounting pretrial order is silent as to cleaning for Accused Practice 39 (APTO, ID:10-11). Cleanability has not been proved.

**** In this same category is the production of Oldsmobile pin gears for the 1961 model year. While not given an accused practice number, these were made by a process which would appear to infringe if cleanability were proved (APTO, O:34-37, especially ¶ 21).

ed Practice 45), and rear wheel spindles at Chevrolet Detroit Forge (Accused Practice 11) (APTO, BM:6-8, CTF:1-5, O:27-31). Bonderlube 242-W was used to make transmission main shafts at Chevrolet Munsie (Accused Practice 15) (APTO, CM:1-3). None of these practices was of the sort which, like the prior trial valve lifter or rocket practices, required cleaning, much less the careful pre-plating cleaning needed for the prior trial Pontiac bumper practices.

The use of TSP to achieve lubricity only is instructive. Although literally reading on the patent, as I have found it does, to accord its use a patent monopoly would be to extend the ambit of the patent beyond those uses in which the need for commercial cleanability combines with satisfactory lubricity to create the unexpected advantage the Courts of Appeals have required. This contrasts with the use of TKPP as a borax substitute in bumper making, which I have held does infringe because such practices did require, and did achieve, commercial cleanability.

2. Practices in Which Borax Rinses were Used as Neutralizers do not Infringe (Accused Practices 1, 2, 8, 18, 20, 23, 24, 32, 34, 35, 39, 43, 55, 57, and 58).*

Plaintiffs charge as infringing a number of processes where borax was used in the rinse to which the metal blank was subjected after phosphating but before the application of the soapy lubricant. These practices, all differing from the prior

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* It should be noted that of these accused practices five have been held in the preceding non-infringing because not cleaned (Accused Practices 2, 20, 34, 35, and 39), and two will also be held non-infringing at pages 53-56 hereafter on factual grounds (Accused Practice 1 in part, and Accused Practice 8).

trial practices where the borax was an integral part of the lubricant, are as follows:

> Accused Practice 1. Bonderlube 265 (soap only) following a Parcolene 21 borax-containing rinse (APTO, ACSP:1-2).
>
> Accused Practices 2, 8, 18, 20, 23, 24, 32, 34, 35, 39, 55, 57, and 58. Bonderlube 234 (soap only) following Parcolene 21 or Stancote L borax-containing rinses (APTO, BM:1, CBC:1, CP:1, CT:1, DM:1, 5-7, DE:1, FBC:1, ID:1, SSG:1-3).
>
> Accused Practice 43. The Oldsmobile usage of J&L Steel in the period from January 1962 through model year 1963, where MA88 borax-containing rinse was allegedly used (APTO, O:1).

Plaintiffs argue that the use of a borax (or equivalent) rinse infringes since it causes borax to be deposited on the workpiece to be combined with the then-applied soap film atop the phosphate on the workpiece. Splitting one step of a process into two does not avoid infringement where the combined steps and the original process are substantially identical or equivalent in terms of function, manner and result. *Matherson-Selig Co. v. Carl Gorr Color Card Inc.*, 301 F.Supp. 336, 349 (N.D. Ill. 1967). Thus, plaintiffs say, the purpose and effect of a borax-containing rinse is the same as if borax were already combined in the soap.

Plaintiffs begin with the submission that borax-containing rinse deposits borax on the workpiece (Othmer, Tr. 763-764; Rabinowicz, Tr. 117-175; PX A-2i). While they offered no credible quantitative proof as to amount of borax from the rinse likely retained in the coating after the lubricant bath, I am inclined to credit the testimony that at least some borax stayed on the workpiece. Plaintiffs also point to Dr.

Rabinowicz' laboratory tests which they say prove that borax and TSP dipped workpieces are more slippery in pin-on-metal tests than phosphate and soap coated blanks without intermediate borax or TSP rinses (Rabinowicz, Tr. 117-178; PX A-16; Rabinowicz, Tr. 208, PX A-25).

Again I need not resolve the conflict between Dr. Rabinowicz' tests and the varying laboratory results reached by defendant's expert, Dr. Ludema. For, as the Third Circuit found production experience superior to chemical disputation as to how the result occurred, so I, in applying the law of the case, have decided to give controlling weight to in-production lubricity and cleanability, rather than differing laboratory predictions as to how particular lubricants might be expected to behave on the cold-forming line. Applying the same reasoning here, I find Accused Practices 1, 2, 8, 18, 20, 23, 24, 32, 34, 35, 39, 43, 55, 57, and 58 to be non-infringing. Here is why.

(a) Put negatively, there was not a shred of evidence that borax (or equivalent) rinses were employed for the purpose of enhancing either the lubricity of the workpiece, or its post-formation cleanabilty.

(b) The record as a whole demonstrates that the only purpose of the borax in the accused rinse processes was to neutralize acid carryover from the phosphate bath. The acid liquid from the phosphate bath tends to remain on the work and be carried over into the lubricant bath. The action of the soap in the lubricant, as well as the life of the soap bath, is adversely affected by such carryover (Gibson, Tr. 1727-1730). "Rinsing techniques are quite necessary" (Henricks, Tr. 3721), since they neutralize the acid phosphate carried on the work before the work reaches the soap bath (France, Tr. 7387-7388). This could be done by a vigorous water rinse (Wojtowicz, Tr. 5738-5739).

It can also be done by adding sodium hydroxide to the soap bath from time to time so as to restore the pH of the soap bath (Gibson, Tr. 1729-1731).

A chemical neutralizing rinse is another way to overcome this problem (Henricks, Tr. 3721-3722). The chemical neutralizer undergoes chemical reaction with the acid phosphate carryover on the work and brings the pH or acidity to a value similar to that of the soap bath, so that the lubricant is not adversely affected by the carryover. This purpose and action of neutralizer rinses is described in Parker (Hooker) technical papers and customer literature, as well as in such literature of Amchem and other suppliers (*e.g.*, DX A-25, Parker tab hand pages 131-148; Pennwalt tab, page entitled "Fosrinse R-1"), and was the subject of testimony by Messrs. Wojtowicz of Montgomery and Gehman of Amchem (Gehman, Tr. 3990-3996; Wojtowicz, Tr. 5738-5739). Townsend of Delco Remy likewise so testified (Townsend, Tr. 3878). This record testimony stands uncontradicted.

(c) The use of borax as a neutralizer in a rinse was recognized by Henricks himself in Example XXXV of his 1950 patent application which discusses a cold-forming process using zinc phosphate followed by a borax-containing rinse (PX 3, p. 63). In the words of the example, after a zinc phosphate coating the work " . . . was given first a cold running water rinse followed by a hot borax rinse of 1½ to 2 ounces per gallon of borax *to neutralize any acid residue*." (Italics added. *Ibid.*) Henricks cancelled that example when the patent examiner required that the specification be shortened and limited to "such parts of it as are commensurate with claims that applicant will continue to prosecute" (PX 3 at pp. 63, 106.)

This disclaimer of Example XXXV as outside of the claims was entirely consistent with the Henricks testimony that

neutralizing rinses were old and well known, and not his invention.

(d) Henricks' understanding of the use of borax as a neutralizer in withdrawn Example XXXV was not the product of a flash insight. The use of neutralizing rinses, including both borax and trisodium phosphate to overcome the acid entrained on zinc phosphate rust-proofed treated work is disclosed in U.S. Patent 2,120,212 (1938) (DX A-54). Whether this, and other contended-for examples of prior art are sufficient to avoid the extension of the patent to rinses is a question of law with which I need not grapple, since it is obvious that Henricks did not invent borax as a neutralizing rinse, and did not claim to.

(e) The evidence is uniform to the point that defendant *thought* it was using borax rinses to neutralize acidity, and not to get added lubricity or cleanability. There are also good indications that defendant did not in fact achieve better lubricity or cleanability from the use of borax rinses.

For example, Accused Practice 1 involved a heavy phosphate coating (Bonderite 181X) with a soap (BL 265) coating preceded by a borax (Parcolene 21) rinse. The practice ran from 1959 to 1963. In 1963 defendant adopted Non-Accused Practice A in which the borax neutralizing rinse was replaced with a non-borax neutralizing rinse (APTO, ACSP:1-6).* The non-accused practice continued from 1963 until the expiration of the patent in 1969. Since there was no different cleaning employed, it is inferable that the presence of absence of borax in the rinse did not affect cleanability.

The same pattern appears with equal sharpness in the production of universal joint bearing races and propeller shaft ends at Chevrolet Parma. From 1957 to May 1963 a borax

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* For finding as to changeover, see pages 54-55, *infra*.

rinse was used after phosphating and then a highly boraxed soap lubricant added (Accused Practice 17). From May 1963 to May 1964 the borax was taken from the lubricant but the borax rinse retained (Accused Practice 18) (APTO, CP:1-9). From May of 1964 onward the borax rinse was abandoned in favor of a non-borax neutralizer (Non-Accused Practices K and L) (APTO, CP:1). Neither the alleged lubricity nor cleanability features of Henricks' Claim 4 appear to have been missed.

(f) The prior trial practice by Diesel Equipment Division of making hydraulic valve lift plungers involved, it will be remembered, BL 235 which contained 3 percent borax and 2 per cent sodium nitrate. The prior trial Pontiac rocket practice involved the same lubricant. These were held to be non-infringing by Judge Wright and, for reasons previously expressed, must now be regarded as infringing as a result of the Third Circuit's reversal. But both prior trial practices *also* involved borax rinses (Parcolene 21 and 20, respectively) (APTO, DE:1; P:1). As best as I can tell plaintiffs did not urge this circumstance as an additional argument in favor of infringement, although such an argument might have been expected had plaintiffs believed the function of the rinse was to deposit more borax on the workpiece. The two referred-to prior trial practices (borax rinse plus borax lubricant) were not unique. See, *e.g.*, Accused Practices 17, 40, 41, 47, 48, 49, and 56.

(g) If, as plaintiffs now suggest, accused rinse processes had an effect of enhancing lubricity and cleanability by dispensing more borax on the part being cold-formed, the direct way to have accomplished that result would have been to include a higher quantity of borax in the already borax-containing lubricant. If borax in the rinse were supposed to serve the same purpose as borax in the lubricant, the purpose could be accomplished more easily (and probably more

cheaply) without the rinse. The logic that the borax in the rinse was aimed to do something other than what was accomplished by the borax in the lubricant seems inescapable, and entirely compatible with the rinse-as-a-neutralizer testimony.

Accordingly, the practices in which borax was used as a neutralizer in the rinse, are not infringing.

3. Practice in which a Trisodium Phosphate Rinse was Used as a Neutralizer does not Infringe (Accused Practice 29)

Trisodium phosphate (TSP), found to be an equivalent inorganic substance fitting within Claim 4,* was used in a neutralizing rinse as part of Accused Practice 29. In that practice numerous products were cold-formed at defendant's Delco Remy division through the use of a trisodium phosphate rinse as an intermediate step after the metal was phosphate coated and before the application of Montgomery DF 1101 soap (APTO, DR:1-2).

The same reasoning for finding non-infringement of the borax neutralizing rinses applies with equal force to the TSP rinse in Accused Practice 29. Indeed, the function of the rinse step as neutralizing the acidity of the phosphate undercoat rather than as enhancing lubricity or cleanabilty is shown by the shifting in and out of this practice to non-accused rinse techniques. For example, the DC generator frame was one of the parts made by Accused Practice 29. The frame was made with the help of a TSP neutralizing rinse from November 1954 to August 1957. Both before TSP was used (1951-1954) (APTO, DR:7) and later (after 1957), a water immersion was

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* See pages 37-38, *infra*.

substituted (*Id.*). The water immersion is Non-Accused Practice Y (APTO, DR:3, 12). The use of an intermediate water rinse bracketed the use of TSP. The only purpose TSP could have served was to avoid the pH problem in the soap bath.

Accused Practice 29 supports the conclusion that the neutralizing rinses were not in design or result related to lubricity or cleanability.

4. Practices Determined not to Involve the Use of Borax (or Equivalents) do not Infringe (Accused Practices 1, 8, and 46).

Considering the many years which have elapsed, the parties have done a remarkable job in retrieving information respecting the accused processes. The result was the formulation of Appendix II to the Accounting Pretrial Order, containing agreements as to the operation of the accused practices, their duration, the materials used, parts produced, etc. The assemblage of these materials saved weeks of additional testimony and eliminated large areas of potential controversy.*

While the vast bulk of the processes were described by agreement, a few disputes remain. Although they involve

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* In their post-trial brief plaintiffs charge defendant with various acts of bad faith, including assaults on its trial tactics. These are generally considered as part of the discussion of multiple damages at pages 66-70, *infra*. In a specific way, however, I will here note that defendant merits a major share of the credit for the formulation of Appendix II of the pretrial order. Its counsel could have used their client's economic muscle to try to uncompromisingly put plaintiffs to their proof in every detail, thus prolonging the case, and maximizing plaintiffs' burden. Instead defendant was flexible, cooperative and forthcoming. Its willingness to pull the laboring oar in the formulation of the pretrial order was in this spirit.

almost entirely the question of whether borax rinses were used, and such has been held in the preceding section to be non-infringing, in the interest of completeness the disputes will now be resolved.

(a) Accused Practice 1 (After 1963)

Accused Practice 1 charges the use by defendants beginning in 1959 at its AC Spark Plug Division of a Parcolene 21 borax rinse to help cold form spark plug shells and shields (APTO, ACSP:1). The rinse was applied by Braun Engineering which precoated the steel. Plaintiffs contend that Parcolene 21 rinse was continued after 1963. Defendant argues that in 1963 Braun came to use Parcolene 24, a non-borax rinse.

Neutralizing rinses of the sort represented by Accused Practice 1 have already been found to be non-infringing. And in another case it might be left at that, since that finding moots the dispute. But here it seems right to tie up as many potential loose ends as possible. Hence, I decide the question.

On defendant's side is direct testimony from Ross Perry, formerly of Parker, who initiated the change at Braun from Parcolene 21 to Parcolene 24 (Perry, Tr. 6590-6591, 6605-6618). Perry testified the change occurred in 1963 (Perry, Tr. 6630). See also, Tr. 6622-6624, DX A-27-2.

Against this plaintiffs cite an affidavit by Braun indicating the use of a Parker "Borox" dip (PX A-267). The Braun attestation was based on information furnished by a then Braun employee named Affeldt (PX A-435). Mr. Affeldt testified on deposition that his memory at the time he made his affidavit was that the rinse continued to be borax (PX A-436). Despite this, relying on Parker sales summaries prepared for this litigation (DX A-77-5; PX A-428), Braun changed its interrogatory answer to eliminate the reference to a borax rinse.

The original Parker records were destroyed in 1976. Although there is evidence that the destruction was inadvertent (PX A-428), plaintiffs argue that the circumstances are suspicious and the destruction inexcusable.

Having considered both sides, I find that Braun ceased to use Parcolene 21 in 1963. I do because, quite apart from the Parker sales summaries, I give credit to Ross Perry, the witness who so testified.*

(b) Accused Practice 8

As with Accused Practice 1, the parties are in controversy respecting whether rinses did or did not contain borax. The practice was employed at Chevrolet Bay City to form steering knuckle parts and other miscellaneous parts. (Accused Practice 8 does involve one small claim of a direct borax-containing lubricant.)* (PX A-20).

The argument about the content of the rinses again centers on the reliability of the Parker sales summaries (DX A-77-5)

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* In 1968 AC began to make its own spark plug shells. These shells were coated identically to what I have found the post-1963 Braun process to have been (Non-Accused Practice A, APTO, ACSP:1). It is undisputed that Parcolene 24, not Parcolene 21 was used as the neutralizer (APTO, ACSP:2). The change from Parcolene 21 to Parcolene 24 by Braun in 1963, and the continued use of Parcolene 24 by defendant in 1968, is another example of the ability to shift from one neutralizing rinse to another with no evident loss of lubricity or cleanability.

* Sixteen of the nineteen 1967-1969 invoices submitted by Youngstown Sheet and Tube describe the coating Lansing applied as "zinc phosphate coat with Bonderite 181X, neutralize with Parcolene 21 and lubricate with Bonderlube 235 (5 minute min.) or equivalent". The other three state "zinc phosphate coat, neutralize and lubricate suitably for our Boltmaker operation" (PX A-227E). BL 235 is one of the prior trial borax-containing lubricants.

balanced against plaintiffs' showing that defendant's own standard purchase orders at least arguably required a borax neutralizer (APTO, CBC:11). Although agreeing with plaintiffs that the Parker summaries are somewhat tainted, there is no reason to think they are faked. It seems to me that they are better evidence than inferences to be drawn from purchase order language. Hence, while the issue is close, defendant has a little the better of it.

(c) Accused Practice 46

Accused Practice 46 charges the use by Oldsmobile of precoated steel purchased by defendant from Jones and Laughlin from about September 1963 through March 1969 (APTO, O:2). The question is the character of the coating.

It appears that from January 1962 through the 1963 model year, defendant's Oldsmobile plant had gotten bumper steel from Jones and Laughlin precoated on J&L's behalf by Precision Metal Coating Company. The coating process consisted of phosphating the steel and lubricating it with DA 2481, a Montgomery vegetable oil substance known as "Kold-Lube" (DX A-51-11, pp. 8-9) and containing no inorganics. In between the phosphating and lubricating, there was a borax neutralizing rinse, MA-88. This is Accused Practice 43 (APTO, O:13-14), which I have previously held to be noninfringing along with the other rinses.

Beginning in September 1963 J&L began to do the precoating itself. This is Accused Practice 46. As with Precision Products, the lubricant used by J&L was the without-organics Kold-Lube (DX A-51-11, pp. 8-9). There is no direct evidence that J&L thereafter used borax either in the lubricant mix or as a rinse. There is weighty direct evidence to the contrary. Witnesses Alexin, Butler, and Pomietto, each of whom participated in and had knowledge of the J&L Surfaglaze coating operation, testified that no material other

than the phosphate and the lubricant were introduced at any point in the process (Alexin, Tr. 5274; Butler, Tr. 5327-5331; Pomietto, Tr. 5340-5341, 5344-5346).

Plaintiffs' strongest piece of evidence to the point that borax was used in the J&L coating comes from the testimony of its expert Gavilovic. Dr. Gavilovic tested J&L samples run in 1974 with the same coating technique it had used since 1963. Using electron microprobe (Gavilovic, Tr. 953-954) and ion microprobe (*Id.* at 955, 957) analytical techniques, Dr. Gavilovic found boron in the samples (Tr. 1011-1013), which finding is consistent with the presence of borax (*Id.* at Tr. 1014-1015). Dr. Gavilovic's finding of boron in the samples I accept as fact. His conclusion that the boron necessarily evidenced the addition by J&L of borax I do not. Apart from the expert evidence which tends to undercut Dr. Gavilovic's conclusion (*e.g.*, Evans, Tr. 4489-4492; Vergosen, Tr. 4437), principally I am persuaded by the evidence of the witnesses who had actual first-hand knowledge of the J&L process, and who denied the use of borax in the lubricant or as a rinse.

I am also moved to this conclusion by plaintiffs' effort (Pl. Br. 61-63) to equate what is contended to be borax in the J&L coating with the borax in BL 235, citing Gavilovic (Tr. 8911). That J&L would have used the prior trial BL 235 lubricant to precoat bumper steel is not likely. The prior trial practices, using the relatively low borax BL 235 with heavy phosphate coatings to cold-form parts not usually requiring plating, are fairly typical of the use of that lubricant in the broader pattern of accused nonbumper practices tried out before me. In bumper making, by way of contrast, the pattern was to use a higher borax (or equivalent lubricant) over light phosphate. If J&L used BL 235 to coat the steel it was providing Oldsmobile for bumper forming, it would be the only example of that coating for that use in this case.

I conclude Accused Practice 46 does not infringe. Plaintiffs finally argue in the alternative as to Accused Practice 46 that it be found that BL 200, 201, or 202 (soap and TKPP) was used by J&L, if borax was not. This submission seems inconsistent with the Accounting Pretrial Order, in which plaintiffs, after J&L's process description of Accused Practice 46, stipulate that: "Plaintiffs do not accept the above representation of Jones & Laughlin and *contend that borax was applied to the steel* after it was phosphate coated." (Underlining added. APTO, O:16). But even were plaintiffs free to make a contention it appears they did not reserve, the case for a TKPP rinse at J&L is far weaker than the claim of a borax rinse. The borax hypothesis, which I have rejected, at least had behind it the testimony of a respected expert. The TKPP alternative submission is utter speculation.

D. Explanation and Table

To make a punctuation mark between the segment of the report (infringement) now concluded, and what follows (damages), a table has been prepared collecting in a short space the conclusions heretofore reached as to which practices (in addition to prior trial practices) infringe, which do not, and why:

TABLE

Accused Practice	Infringing Practices			Non-Infringing Practices		
	Practices controlled by prior trial bumper practice (a)	Practices controlled by prior trial non-bumper extruded parts practices (b)	Practices substituting TKPP for borax in bumper lubricants and providing lubricity and cleanability analogous to prior trial bumper practices (c)	Practices in which cleanability not shown (d)	Practices using borax or TSP as a neutralizer only - not shown to have purpose or effect of enhancing cleanability or lubricity (e)	Practices in which no borax (or equivalent) shown to be used (f)
1					X	X (after 1963)
2				X	X	
3				X		
4	X					
5	X					
6			X			
7		X				
8					X	X
9		X				
10				X		
11				X		
12	X					
13	X					
14			X			
15				X		
16		X				
17		X				
18					X	
19				X		
20				X	X	

TABLE

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21				X		
22		X			X	
23					X	
24						
25		X (in part)		X (in part)		
26		X				
27		X				
28		X			X (TSP only)	
29						
30		X				
31		X			X	
32				X		
33				X	X	
34				X	X	
35						
36	X					
37		X				
38		X		X	X	
39				X		
40						

41				X		
42		X				
43					X	
44				X		
45				X		
46						X
47		X				
48	X					
49	X					
50			X			
51	X					
52			X			
53			X			
54		X				
55					X	
56		X				
57					X	
58					X	
Totals	8	17	5	17	16	3

III. DAMAGES

A. Introduction

Plaintiffs claim that defendant's infringements warrant a compensatory award of $121 million. They also request interest which, were their compensatory damage claim fully allowed, would amount to about $141 million. Finally plaintiffs seek treble the amount of the claimed damages (*i.e.*, an additional $242 million) together with attorneys' fees of about $1.5 million. Hence, plaintiffs reach for a recovery of about one half billion dollars.

Not surprisingly, defendant dissents. It submits that as a matter of law and fact plaintiffs' recovery cannot include multiple damages or attorneys' fees. And it argues that even were plaintiffs to have proved that each of the accused practices infringed, damages could be no higher than $200,000. Lastly, defendant disputes plaintiff's right to interest.

In resolving these not-insubstantial disagreements I have opted first to decide the claims for multiple damages and counsel fees. Next determined will be the standard to be applied in arriving at a reasonable royalty. Thereafter, the facts relating to the usefulness of the Henricks process in bumper making and the forming of non-bumper parts will be found, and various of the parties' damage-related arguments will be resolved. Thus will the stage be set for the construction of hypothetical negotiations leading to a "reasonable royalty." Which will leave only the legal question of plaintiffs' entitlement to prejudgment interest to be decided. At the end will come the accounting.

B. Denial of Plaintiffs' Claim to Multiple Damages and Attorneys' Fees

Plaintiffs seek trebled damages under 35 *U.S.C.* § 284, which provides that "the Court may increase the damages up to three times the amount found or assessed." This is a penalty provision. It is discretionary, and applicable only if there is egregious conduct by the defendant, such as conscious, deliberate and willful appropriation of the patented invention without good faith belief of patent invalidity or non-infringement, which makes out a gross case of unreasonable conduct, and where the plaintiff has been blameless. *Enterprise Mfg. Co. v. Shakespeare Co.*, 141 F.2d 916, 920-921 (6th Cir. 1944); *General Motors v. Dailey*, 93 F.2d 938, 942 (6th Cir. 1937); *Sel-O-Rak Corp. v. Henry Hanger & Display Fixture Corp.*, 159 F. Supp. 769, 777 (S.D. Fla. 1958), *aff'd*, 270 F.2d 635 (5th Cir. 1959); *Wahl v. Carrier Mfg. Corp.*, 511 F.2d 209, 214 (7th Cir. 1975). An award of multiple damages typically requires willfulness by the infringer. *W. L. Gore & Associates, Inc. v. Carlisle Corporation*, ____F. Supp. ____, Slip Opinion at p. 4 (D. Del. 7/26/79). Where the question of validity is close, or novel, it has been held to be an abuse of discretion to award treble damages. *Yoder Bros., Inc., v. California-Florida Plant Corp.*, 537 F.2d 1347, 1383-1384 (5th Cir. 1976), *cert. den.*, 429 U.S. 1094 (1977).

The statute at 35 *U.S.C.* § 285 provides that "[t]he court in exceptional cases may award reasonable attorney fees to the prevailing party." The courts have confined attorney fee awards to those cases where exemplary and punitive relief is required because of bad faith, fraud, malice or similar unconscionable conduct. *ADM Corp. v. Speedmaster Packaging Corp.*, 525 F.2d 662, 664 (3d Cir. 1975); *Uniflow Manufacturing Co. v. King-Seeley Thermos Co.*, 428 F.2d 335 (6th Cir. 1970), *cert. den.*, 400 U.S. 943 (1970). An award is contraindicated in a hard and fairly fought case in-

volving difficult and doubtful points of law. *Pierce v. Allen B. Du Mont Labs, Inc.*, 297 F.2d 323, 329-30 (3d Cir. 1961). See *Dixie Cup Co. v. Paper Container Mfg. Co.*, 169 F.2d 645, 651 (7th Cir. 1948); *W. L. Gore Associates v. Carlisle Corporation, supra*, at p. 14 of Slip Opinion.

The most obvious stumbling block to plaintiffs' argument is that two highly respected jurists have reached the selfsame conclusions for which plaintiffs now accuse defendant of bad faith. Judge Robson in 1963 held the patent invalid (Princ. Doc., Tab 2). Judge Wright in 1970 held the patent had not been infringed. 316 F.Supp. 1376 (D. Del. 1970). Although both decisions were subsequently reversed, plaintiffs cannot brush General Motors' defense of its accused practices with the paint of egregious unreasonableness without splashing the same contumacious color on the decisions of these able judges. Plaintiffs have cited no case in which a defendant under such circumstances has been held to have acted in bad faith or in reckless disregard of the patentee's rights. This will not be the first.

The view which I take, *i.e.*, that the prior court findings of invalidity and non-infringement are incompatible with charges that defendant was guilty of *mala fides* or reckless wrongdoing, makes it unnecessary to consider in detail plaintiffs' barrage of particularized misconduct allegations. Nonetheless, I separately find that neither singly or in combination do the charges as to defendant's behavior involve the quality of misconduct required to sustain a multiple damages award or to meet the possibly less stringent test for awarding attorneys' fees.

For example, plaintiffs charge defendant with arrogance for relying upon agreements from its lubricant suppliers indemnifying it against the risk of being adjudicated an infringer. To the contrary, I find the willingness of suppliers to give indemnifications in the circumstances here to support

defendant's good faith in independently concluding that its practices did not infringe.

Another signal of defendant's bad faith, say plaintiffs, is its failure to have secured an opinion of outside counsel to buttress its own patent invalidity, non-infringement conclusions. While there may be cases where the procuring of outside counsel's opinion proved good faith, or its absence evidenced willfulness, this case is not one of them. Defendant's in-house patent attorneys have shown themselves to be eminently knowledgeable and superbly well qualified in the field of their expertise. Their views as to invalidity and non-infringement were sufficiently substantial to have won the support of Judges Robson and Wright. That it has been finally adjudicated they were in error is no cause to penalize defendant for relying on them.

Treating conclusorily with other of plaintiffs' "bad faith" contentions, I decline to find that defendant purposely withheld information, that it attempted to mislead the Court, that it took no reasonably effective steps to retain records, or that taken as a whole its responses to plaintiffs' pretrial discovery were calculated to deceive plaintiffs and their experts.

Having considered plaintiffs' various submissions, the history of the case and the record in its entirety impel me to conclude that defendant acted in good faith and not recklessly. There will be no punitive award in the shape of multiple damages. And plaintiffs will pay their own counsel fees.

C. Standard to be Applied in Determining a Reasonable Royalty

The statutory provision at 35 *U.S.C.* § 284 mandates the award of " . . . damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer. . . ."* *Trio Process Corp. v. L. Goldstein's Sons, Inc.*, 533 F.2d 126, 129 (3d Cir. 1976).

Where, as here, a patentee has not itself practiced the patented process or itself made, used, or sold the patented product, the patentee suffers infringement damages only in the amount of a reasonable royalty. In setting the reasonable royalty in such a case, account should be taken of the inability of plaintiff to benefit from the patent other than by collecting royalties, and the amount a reasonable licensee would agree to, each mindful of the fact that the licensor cannot benefit from the patent except by collecting royalties. *Trio Process Co. v. L. Goldstein's Sons, Inc., supra*, 533 F.2d at 129; *Ellipse Corp. v. Ford Motor Co.*, 461 F. Supp. 1354, 1362 (N.D. Ill. 1978).

The only rational way to determine reasonable royalties is by reference to hypothetical negotiations. Such negotiations are assumed to be between a reasonable prospective licensor and a reasonable prospective licensee, each of whom is informed as to the relevant facts. The factors that would enter into a royalty determination in such hypothetical negotiations

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* Section 284 differs from Section 4921, R.S. (the law prior to August 1, 1946) which permitted the patentee to recover the "profits to be accounted for by the defendant," as well as the "damages the complainant has sustained." 1 *Walker, Patents* (Deller Ed. 1937) p. 628; *Aro v. Convertible Top Replacement Corp.*, 377 U.S. 476, 507 (1964); *Dowagiac Mfg. Co. v. Minnesota* _____ *(1915).*

control the reasonable royalty to be awarded in an infringement suit. *Egry Register v. Standard Register*, 23 F.2d 438, 443 (6th Cir. 1928); *Horvath v. McCord Radiator & Mfg. Co.*, 100 F.2d 326, 335 (6th Cir. 1938); *Georgia-Pacific v. U.S. Plywood*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970), *modified*, 446 F.2d 295 (2d Cir. 1971), *cert.den.* 404 U.S. 870 (1971).

D. Resolution of Disputes as to Factors to be Considered in Fixing a Royalty

From the foregoing legal propositions neither side dissents. Where they come apart is in their respective views of what the hypothetical negotiators would as a matter of fact, and could as a matter of law, have considered in the bargaining process. The parties' contentions are prolix, and sometimes run on separate tracks. In sorting them out, I first find the facts relating to the usefulness of the Henricks process in the manufacture of bumpers, and then in the making of non-bumper parts. In the course of so doing the general effect of what will have been found as to defendant's use of the patent on plaintiffs' damages theories will be considered. Thereafter dealt with will be contentions advanced by defendant as to certain arguably value-diminishing factors. With this groundwork laid, the bargaining will be hypothesized and license terms (including a reasonable royalty) will be found.

1. An Overview

The parties agree that such advantages as the patent offered would have been taken into account by the hypothetical negotiators. They collide in their views as to just what those advantages were. Plaintiffs are lyrical in their praise of the Henricks process. Defendant trivializes it. Between plaintiffs' rhapsody and defendant's dirge lies the truth.

Because the discussion which will follow is lengthy, some initial comments about the parties' contentions will supply perspective.

The most important single disagreement between the parties centers on the question of whether defendant could have cold formed bumpers (and non-bumper parts) without the Henricks process. As plaintiffs see it, defendant had the choice between (i) infringing, by use of a cold forming operation, or (ii) not infringing by use of expensive "hot forging" and machining processes. Positing this as the choice, plaintiffs compare the benefit of cold forming using Henricks, with the cost and difficulty of other-than-cold-forming processes. By this comparison they seek credit for a portion of the defendant's royalty savings and gains which they allege came from using the Henricks process.

On this basis plaintiffs ask a royalty of 2.4 per cent of the sales price of defendant's bumpers to its dealers, for a total bumper royalty, assuming all processes accused in fact infringed, of $70,132,764. In the area of non-bumper parts, plaintiffs ask not a percentage of sales but of the savings and gains, again contrasting the cost of Henricks and the cost of hot forging or machining, on the continued hypothesis that but for defendant's use of their invention those would have been its only alternatives. Plaintiffs calculate defendant's savings and gains in the manufacture of non-bumper parts at $90,522,607. Of this figure they seek 56.16 per cent, or (assuming all accused processes in fact infringed) $50,833,172.

Plaintiffs' difference in approach between valuing their invention in bumper manufacture and valuing it in the making of non-bumper parts is not without foreseeable consequences. In the bumper segment of their claims, plaintiffs have a fallback. For if the premise that defendant could not have cold formed bumpers except with Henricks is found to be fallacious, an evidential basis for the making of an award

nevertheless exists. Bumper sales figures were proved, and a percentage figure may be rationally derived to apply to those sales by way of reasonable royalty even if (contrary to plaintiffs' contention) other non-infringing cold forming alternatives were available.

In plaintiffs' non-bumper claims, however, no such fallback is available. For by relying solely on savings and gains, plaintiffs supplied an all or nothing-at-all choice. Their comparison was between Henricks and machining or hot forging. The premise for which they advocated was that parts could be cold formed only through Henricks. The comparison between Henricks and machining or hot forging produced the savings of which they seek a share. But if non-bumper parts could be cold formed without Henricks, the comparison fails. *No savings and gains were proved between Henricks and other non-bumper cold forming alternatives, since plaintiffs elected to place sole reliance on the proposition that no such alternatives were available. And no sales figures for non-bumper parts were supplied such as might allow the development of a percent-of-sales royalty.*

The discussion which follows will first treat with the usefulness of the Henricks process in the making of bumpers. It will be found that the invention was advantageous, but not preemptive of the cold forming field. Although rejecting plaintiffs' proposition that there were no non-infringing alternatives available, the findings of value allow for hypothetical negotiations in a quantifiable way.

The findings as to the value of the invention in the cold forming of non-extruded parts will be otherwise. It will be found that there were numerous, often-used, non-infringing cold forming alternatives at hand to defendant, contrary to plaintiffs' claim that the defendant's choice was between Henricks and hot forging or machining. It will be concluded that in the non-bumper area the invention was of some (although not

great) value, but that plaintiffs' savings and gains evidence makes it impossible to quantify such value as it had in a legally acceptable way.

2. The Usefulness of the Henricks Process in Bumper Making

It was in the area of bumper manufacture that the Henricks invention found its greatest utility. Here it was that the high borax (or TKPP) lubricant taught by the patent found its greatest use. And it was in bumper making that cleanability, claimed by Henricks as a hallmark of his invention, was shown to be most needed as a predicate to plating.

But it is too much to claim, as plaintiffs have, that defendant would have been unable to cold form bumpers with reasonable commercial success absent the Henricks process. In fact, Henricks was thought by various of defendant's divisions to be a superior lubrication system for bumper making, but it was not the only system. The experience of each of defendant's divisions bears out this conclusion.

(a) Oldsmobile Bumpers

It is highly significant that during the entire life of the patent, Oldsmobile successfully made bumpers without using the Henricks process.

The early Oldsmobile process for cold forming bumpers from December 1949 to November 1953 was a non-infringing alternative (Non-Accused Practice KK). Phosphate and a variety of other non-borax or equivalent lubricants were used from November 1952 to the January 1965 model year (Non-Accused Practices LL, MM and NN) (APTO, O:3). Accused (but I have decided non-infringing) Practice 43 was used for a time in 1962 and 1963, and Accused but non-infringing Practice 46, from September 1963 to March 1969 (APTO, O:1, 2). In short, Oldsmobile was successful in cold forming

bumpers without the use of the Henricks process during the entire life of the patent. And its election to use non-borax (or equivalent) lubricants came despite its familiarity through usage of a high borax-containing lubricant to make rocket hardware in Infringing Practice 42, from June 1953 to January 1954 (APTO, O:1, 6).

Recognizing that the Oldsmobile attachment to non-infringing processes runs flatly counter to the preemptive advantages which they claim for the Henricks process, plaintiffs make two efforts to undercut the significance of the Oldsmobile experience.

First, plaintiffs point out that Oldsmobile Non-Accused Practice KK, running from December 1949 to November 1953, involved the application of Montgomery DQ 593 over phosphated flat polished, steel blanks (APTO, O:11-12). Montgomery DQ 593 is a wax-type lubricant which contains Degras castor wax, soap and (according to plaintiffs) 2.73 percent trisodium phosphate (Wojtowicz, Tr. 5665-5667). Although plaintiffs in the pretrial order have elected not to accuse the practice, they urge that defendant must affirmatively prove it does not infringe in order to rely on it as a non-infringing alternative. Defendant responds that it was entitled to assume that plaintiffs regarded the non-accused process as non-infringing, and that in all events the lubricant composition for Non-Accused Practice KK as sold to General Motors, had .59 percent trisodium phosphate and that the purpose of the TSP was to stabilize the emulsions (Tr. 5667).

Defendant has the better side of this argument. I do not find that the use (if it was used) of a relatively trivial amount of TSP as an emulsifier (which contrasts with the much larger borax or equivalent percentages in infringing bumper processes) contributed to lubricity or cleanability. There is no merit to plaintiffs afterthought-effort to charge as infringing

at trial what they had up to then opted to style as Non-Accused Practice KK.*

Plaintiffs also argue from a reference in a 1959 letter from a Pontiac employee to the Oldsmobile process as a "soap-boraz [sic] lubricant" (PX A-288), that Non-Accused Practices LL and MM were in fact infringing. They use the letter as the basis for a claim that they were in error in agreeing in the Accounting Pretrial Order to a description of those non-accused practices (LL and MM) as not containing borax. Although I would consider releasing plaintiffs from their stipulation if it were necessary to do justice, I decline to do so here. There is no showing that the letter is newly discovered by them, or even if it were, that this scrap of proof outweighs the evidence upon which they must have relied in making the judicial admission of "no borax."

To sum up, Oldsmobile's experience shows it was commercially practicable throughout the life of the Henricks patent to cold form bumpers without utilizing the Claim 4 process.

(b) Chevrolet Bumpers

(i) Chevrolet's Use of the Patented Process

While Oldsmobile shows defendant's ability to cold form bumpers without the Henricks process, the experience at its other divisions shows the development of a strong leaning to the patented technique.

At Chevrolet bumpers were hot forged until 1954 (APTO, CL:3). Under date of January 14, 1953, the Chevrolet Division submitted an Appropriation Request (PX A-130) for about $40,000,000, which was later revised upward to $46,621,000

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* "Plaintiffs do not accuse any of the lubricants stated in paragraph 4 above [including that of Non-Accused Practice KK] in the cold forming of bumpers. . . ." (APTO, O:12).

on December 10, 1954 to construct and completely equip a new plant in Livonia, Michigan, capable of producing "90 per cent of Chevrolet's overall requirements of Passenger front and rear bumpers . . . of the types designed for 1955 Model production," to produce "Commercial (½, ¾ and 1 ton) bumpers" and to produce "springs" (PX A-130, p. 2).

Among other reasons, this new plant was needed, because:

> "Design changes for 1955 passenger car bumpers . . . necessitate new processes and methods which obsolete the major portion of the existing fabricating, processing and plating equipment." (PX A-130, p. 7).

Furthermore, for 1955 there was "a radical change in the design of bumpers" to make them "an integral part of the overall car from an appearance standpoint." The Appropriation Request explained that these new designs could not be economically made by hot forging:

> "Due to the intricate curvatures of the proposed 1955 model car bumpers, it will be necessary to form the metal by the 'cold drawing' method in order to eliminate wrinkles and surface irregularities which would require excessive polishing after forming rather than by the present so-called 'hot forming' method." (PX A-130, p. 7.)

When this freshly minted plant began pumping out bumpers in 1954 the lubricant of choice was not the Henricks lubricant. Rather it was an application of plain soap (BL 215) over phosphate (Non-Accused Practice H) (APTO, CL:1, 3, 7).* The use of soap only BL 215 resulted in the satisfactory

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* Plaintiffs seek to be relieved of their pretrial stipulation to the effect that Non-Accused Practice H involved no borax. They argue that the

continued on next page

production of bumpers (Bolton, Tr. 4592-4594; Weil, Tr. 3140; Kary, Tr. 7464).

But it became apparent by 1957 and 1958, that Chevrolet-Livonia was experiencing two major problems: namely, with respect to the quality and cost of the bumpers manufactured (Kary, Tr. 7563, 7596). The plant had plating problems which were so severe that there were days at Chevrolet-Livonia in 1957-58 when bumpers could not be plated "because the quality was so bad" that the line had to be shut down and the employees sent home (Kary, Tr. 7546). A plant report for the week ended September 14, 1958, flags as unusual "... production problems being encountered on 1959 Model [bumper] Parts" (PX A-136).

A Chevrolet Lubricant Manual published in 1967 says that such problems may be caused by improper lubrication (PX A-126, p. 3). As I read the Manual, it recommends the use of soap and borax lubricants for severe draws (PX A-126, p. 5). This Chevrolet document was anticipated by a publication of defendant's Shop Lubrication Committee issued in December 1955 (PX A-129) and reissued in October 1959 (PX A-128) recommending a dry soap and borax film for use in severe working conditions. (PX A-128 at 105-106; PX A-129 at 506-507).

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Parker specifications recommended the application of Parcolene 21 (90% borax) with the use of Bonderlube 215 over phosphated steel in cold forming (DX A-25). I decline to vacate the portion of the pretrial order dealing with Non-Accused Practice H because: (1) There is no showing that the information now relied on is newly discovered, (2) there is no showing that the inference plaintiffs seek to draw outweighs the evidence on which plaintiffs relied at the time they entered into the stipulation, *e.g.*, Kary, Tr. 7603, and (3) even if Parcolene 21 were used, its use would have been as a non-infringing neutralizer, not as a lubricant.

Departing from the usual practice of changing lubricants at the time of a model changeover (Herrmann, Tr. 4995-4997), Livonia switched in mid-November 1958 after the commencement of production of bumpers for the 1959 model from Bonderlube 215 (soap only) to Kerns 3833 (PX A-126; APTO, CL:1, 7) with full knowledge that Kerns 3833 contained borax (Kary, Tr. 7565-7566).

In the period mid-November 1958 until mid-January 1965, Chevrolet used soap and borax over phosphated steel to cold form about 93 per cent of its bumpers (PX A-285-2). Out of the 30,045,354 bumpers manufactured during this period, 27,882,018 used soap and borax, mostly Kerns 3833, with a minor use of Pennwalt's soap and borax Drawcote 1047 (PX A-285-2; APTO, CL:8). During the same period, Chevrolet avoided infringement to a limited extent by using a non-accused practice, Montgomery DA 2481 or DB 2481 (hereinafter 2481) because Oldsmobile had successfully used that product (Kary, Tr. 7465) (APTO, CL:8, 1; PX A-285-2).

The soap and borax lubricants Kerns 3833 and Drawcote 1047 (800 lbs. in 1961), as a percentage of the total lubricants used for the manufacture of Chevrolet bumpers for the period mid-November 1958 through 1964, comes out as follows (APTO, CL:8):

1958 — from mid-November — 100%
1959 — 100%
1960 — 91%
1961 — 66%
1962 — 97%
1963 — 96%
1964 — 100%

The record shows that the experience at Chevrolet-Livonia with the Montgomery 2481 had been unsatisfactory because that non-infringing lubricant created "Bonderlube impres-

sions" (Kary, Tr. 7490-7491) requiring Chevrolet to shut down its production line every hour or so for die cleaning (Kary, Tr. 7495, 7532). After having used Montgomery 2481 for 9 per cent of its total lubricant requirements in 1960, 34 per cent in 1961, 3 per cent in 1962, and 4 per cent in 1963 (APTO, CL:8), the lack of satisfaction with the lubricant caused Chevrolet to stop using it (Kary, Tr. 7490-7491). And this despite the fact that Montgomery 2481 was lower in cost per pound and lubrication cost per bumper than the soap and borax Kerns 3833 (PX A-285-2). Price of the chemical was not the consideration at Chevrolet-Livonia in any period in choosing Kerns 3833 over Montgomery 2481 (Kary, Tr. 7503, 7503-A).

I find that Chevrolet used Kerns 3833 as its dominant lubricating system from mid-November 1958 to mid-January 1965 because it was more satisfactory to Chevrolet in its bumper forming operations than the non-infringing Montgomery 2481 which Oldsmobile had used.

In the period mid-January 1965 until the expiration of the patent in March 1969, Chevrolet used soap and TKPP, which I have found to be a borax equivalent, over phosphated steel to cold form about 84 per cent of its bumpers. Out of the 25, 487, 109 bumpers manufactured by Chevrolet during that period 21, 244, 697 used a lubricant containing TKPP (Bonderlube 200 or 200A) (PX A-282-2).

The balance were manufactured through the use of a non-accused practice, Bruce's Bruko 27 or 27B (hereinafter Bruko 27) (APTO, CL:2, 8-9; PX A-285-2). The figures break down during that period to show that Chevrolet used soap and TKPP (Bonderlube 200) as a percentage of the total lubricants used for the manufacture of bumpers, as follows:

1965 — 50% (included Kerns 3833 in January)
1966 — 89%

1967 – 100%
1968 – 100%
1969 – until expiration – 100%

(APTO, CL:8-9.)

The Bruko lubricant – not accused and unquestionably not infringing – cost only half as much per bumper as the BL 200 (soap and TKPP) lubricant with which it for a time competed for Chevrolet's favor (PX A-285-2). Cost, along with the elimination of the risk that the inclusion of TKPP would be held to read on Henricks, argued for continued usage of Bruko. Yet despite Bruko's advantages, use of BL 200 lubricant quickly came to monopolize Chevrolet's bumper making operation (APTO, CL:9). Defendant's explanation that this occurred because the Bruko salesmen were not aggressive is lame and inconsistent with the documentary evidence (DX A-25; PX A-172). I find that, as with the switch from BL 215 (soap only) to Kerns 3833 (soap and borax) beginning in 1958, the choice of BL 200 (soap and TKPP) beginning in 1965 to the ultimate exclusion of Bruko 27 (soap only) was made because Chevrolet thought BL 200 was better suited to its needs than the non-infringing alternatives.

Plaintiffs argue that except through the use of the infringing process during the infringement period, Chevrolet could not have gotten the advantages of cold forming bumpers. From this premise they urge that but for the Henricks process Chevrolet bumpers would have had to have been produced by the old and expensive hot forging method, or if they were cold formed that the sheets of steel could not have been flat polished. Polishing, plaintiffs suggest, would have had to have been done after the bumpers were shaped, a much more expensive procedure since hand work would have needed to be done to clean the contours sufficiently for electroplating. They compute the saving (pre-forming flat polishing vs. post-forming contour polishing) at $1.53 per bumper, multiply

this by the 49,126,715 bumpers produced using the Henricks process from 1959-1969, and credit the Henricks process with saving Chevrolet over $75,164,000. While not relying upon savings as royalty measure for bumper manufacture, plaintiffs do point to that figure as tending to validate the $25,502,000 they seek on account of Chevrolet's infringement.

It is a fact, as I have found, that Chevrolet preferred soap and borax (and later soap and TKPP) to soap-only lubricants. And the reason was that Chevrolet thought that Henricks-type lubricants did a better job. But it is too much a leap from this to a conclusion that without using soap and borax or equivalent lubricants defendant would have had to hot pour its bumpers into molds, or to cold form them without the ability to first flat polish. Other non-infringing lubricants worked at Oldsmobile,* and likewise, as will be seen, at other divisions. I have no doubt that such lubricants could also have been made to work at Chevrolet.

What emerges from the evidence is the image of Chevrolet coming to use Henricks-type lubricants because they saw those lubricants as creating fewer problems than other lubricants. Other divisions at different times had and would come to different conclusions. It would be for the plaintiffs' negotiators to set a rate which would encourage Chevrolet to make the use of the Henricks process which it in fact did from 1957 to 1969. They would avoid grasping for a royalty level which would make Chevrolet turn to the available non-infringing alternatives. See *Foster v. American Machine & Foundry Co.* 492 F.2d 1317, 1322 fn. (2d Cir. 1974).

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* Indeed the genesis of plaintiffs' computations of savings from flat polishing stems from a 1950 article by McVey and Darsey reporting the success of the Oldsmobile (non-infringing) alternative (DX A-9, Item 1, p. 251).

(ii) The Shape of the Chevrolet Bumper Did Not Make Essential the Use of the Henricks Process.

In support of their effort to show the essentiality of the Henricks process, plaintiffs have attempted to connect a change to a borax-containing lubricant in 1958 to the need to form a more intricately shaped bumper. Plaintiffs' argument was that even if simple bumpers could be produced without Henricks, complex bumpers could not. The instrument for the effort to show that bumper shapes became more difficult to form (particularly in 1959), thereby requiring a better lubricant, was Hubert Shortt, the President of Technograph, one of plaintiffs' corporations. Without disparaging the sincerity of Mr. Shortt's opinions, I find them unacceptable.

Mr. Shortt had seen bumpers made only once, a couple of months prior to his testimony (Shortt, Tr. 2448-2449). He could not tell enough about bumpers to identify the specific construction of the Chevrolet 1958-59 front bumpers he showed in pictures accompanying his testimony (PX A-141-5 through 9). On direct examination he identified the 1959 model year front bumper as being of a massive one-piece construction and drew a cross section sketch of it (Shortt, Tr. 2273-2277; PX A-141-7A). On cross examination, Mr. Shortt again identified the 1959 Chevrolet front bumper as being of a massive one-piece construction and he again drew a cross sectional sketch of it (Shortt, Tr. 2455-2473, 2481-2482; DX A-66b). Mr. Shortt concluded from a slide show he produced that the 1959 model year bumpers were far more difficult to make than the 1958 bumpers (Tr. 2273-2274, 2474-2475), the 1959 model year front bumper was a "trouble-maker in here if there ever was one" (Tr. 2274) and that lubrication (presumably soap and borax) was required to make the part (Tr. 2275).

Robert Lawson is the master mechanic at Chevrolet-Livonia (Lawson, Tr. 3084-3085; DX A-33, tab 50). As master mechanic, Mr. Lawson is in charge of all manufacturing of bumper parts (Lawson, Tr. 3085-3086). Mr. Lawson testified that the 1958 model year front bumper was made in three pieces (Tr. 3157; DX A-66EE) and the 1959 model year front bumper was made in two pieces (Tr. 3158; DX-A-66CC). He further testified that the 1959 model year front bumper was an easier design to make than the 1958 model year, that the 1958 model year front outer wings were extremely difficult (Tr. 3160-3164) and that "I am confident that at no time were we really concerned about the lubricant as far as being able to make the part" (Tr. 3164). The lubricant used on the harder-to-make 1958 model year parts was soap only (BL 215) (APTO, CL:7).

Not only did Mr. Shortt misidentify the 1959 Chevrolet front bumper as being of a one-piece design, he included non-bumper parts (valence assemblies) as part of the one-piece bumper. Compare Shortt's sketch (DX A-66B) with the isometric view of the 1959 Chevrolet front bumper (DX A-66cc). Mr. Lawson testified that the valence assemblies were not part of the 1959 model year front bumper, were not made by Chevrolet-Livonia and were of much thinner gauge metal stock than the bumper parts (Lawson, Tr. 3158-3160).

Until confronted with an exhibit highlighting it, Mr. Shortt did not appear to know that the 1958 and 1959 model year bumpers were of a multi-piece design (Shortt, Tr. 2485). He also admitted he did not look at the engineering drawings defendant sent to plaintiffs regarding the 1959 model year front bumper parts (Shortt, Tr. 2497), which drawings would clearly have revealed that the 1959 front bumper is of a two-piece design.

Mr. Shortt's lack of expertise on the subject of the relationship between lubricant use and the intricacy of bumper

design was further shown by his identification of Pontiac's 1956 model year front bumper as being a "mammoth" one-piece design, and that this one-piece design included the "Dagmars" (bomb guards) (Shortt, Tr. 2280-2281; PX A-141-14). In fact, plaintiffs' Exhibit 63 from the infringement trial shows Pontiac's 1956 model year front bumper as consisting of five parts, Nos. 521374, 521771-2, and 521794-5. Those parts are clearly labeled on plaintiffs' Exhibit 63.

I give no credit to Mr. Shortt's opinions respecting the intricacy of various bumper designs. And I reject plaintiffs' assertion that changes in bumper design made essential the use of the Henricks process.

(c) Pontiac Bumpers

From 1952 through the 1955 model year, Pontiac cold formed by Non-Accused Practice QQ using non-infringing No-Mar a portion of the bumpers it sold, and purchased the remainder from outside vendors (APTO, P:6) including Houdaille (Pinner, Tr. 1133-1134, 1130-1131).

The use of No-Mar in Non-Accused Practice QQ made it necessary to spray a plastic coating on the blanks and, in many cases, on "both sides" of the blank. The sprayed plastic was "messy" as it got on "all surrounding areas;" it produces "a messy part that the workers hate[d] to handle as it require[d] wearing of gloves as well as the protective clothing such as aprons, etc." The parts had to be washed during the process to enable welding. "Trim and pierce operations pick[ed] up a lot of slug marks during the processing because the plastic adhere[d] to the dies. Slug and fine trim ha[d] a tendency to stick to the die causing these slug marks." The entire line had to be stopped in order to clean the dies and there was no production during that time (PX A-214-1; Herrmann, Tr. 4963-4965, 4968).

At the start of the 1955 model year, a purple Mar-proof coating was sprayed over bare steel. After baking, a plastic coating was sprayed on the blank. As of November 19, 1954, at least, a decision had been tentatively reached to replace the process (PX A-214-1).

In September, October and November of 1955, Pontiac used bumper Accused Practice 48 which consisted of sending the steel for bomb type bumper guards (Parts Nos. 521424-5 to Production Finishing Co. to be precoated with Bonderlube 246 (15% borax) over phosphate; the coated steel then being returned to Pontiac where it wa coated with Molycote and cold formed (APTO, P:6-7).

Thereafter Pontiac began the prior trial practice which consisted of coating flat polished steel blanks with phosphate, then immersing them in an aqueous solution of Parcolene 21 (90% borax) coating with Bonderlube 246 and thereafter deforming the steel blanks to form bumper parts, which practice was held to be an infringement by the Third Circuit (*Id.*, P:7-11).

Except for the 1956 model year, when Pontiac continued to use non-infringing Marproof or No-Mar for a limited number of bumpers, from December 1955 to August 1963, Pontiac used soap and borax over phosphated steel for its bumpers, as follows:

Lubricant	Period of Use
Bonderlube 246 (15% borax)	December 1955-December 1958
Parker PTD 1239A (45% borax)	December 1958-March 1959
Bonderlube 249A (30% borax)	March 1959-August 1963

(APTO, P:7, 9)*

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* The BL 246 practice is the prior trial practice. The PTD 1239A and BL 249A processes are Accused (and, I have found, infringing) Practice

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Pontiac considered the Henricks process as better than the Marproof wet lubricant (Weil, App. 7:3120;** Weil, Tr. 1695-1696; Herrmann, Tr. 4989-4990). It reduced die loading, down time, scratching of the workpiece, and hand polishing (Weil, App. 7:3096-3097).

After the installation of the Henricks process, Pontiac listed some of the "advantages" of the soap and borax lubricant (Bonderlube 246) over the use of the plastic spray lubricant (PX A-214-2, dated "shortly after October 31, 1955").

> "1. The new lubricant has superior drawing qualities, therefore it reduces scoring of the dies and parts. This has reduced the amount of down time needed to remove scores from the dies.
>
> "2. It is possible with the new lubricant, which is a dry coating, to keep the dies and presses clean. This was not possible with the sticky spray compound.
>
> "3. The use of the new lubricant eliminates the five men per shift, that were needed at the presses, to apply the spray compound. This is a savings of approximately $.05 per car."

Pontiac never considered the price of the soap and borax lubricant as the reason for choosing the Henricks process over

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51 (APTO, P:2-3). Infringing Practice 51 follows on the heels of the prior trial practice, utilizes high borax lubricants, and accomplishes the same results as the practice adjudicated by the Third Circuit as infringing. Defendant's continued effort to avoid the law-of-the-case determination that this practice also infringes (Defendant's Comment on Plaintiffs' Proposed Finding 344) is noted and rejected.

** Refers to Appendix filed in Third Circuit in Infringement Trial.

non-infringing processes (Weil, Tr. 3550; Herrmann, Tr. 5098-5102, 4972). Indeed, it would appear that between 1956 and 1959, the cost per bumper of soap and borax lubrication materials at Pontiac was slightly above the cost of Bonderlube 215 at Chevrolet-Livonia, and that between 1959 and 1963 the cost per bumper of soap and borax lubrication materials at Pontiac exceeded the cost of Montgomery DA 2481 at Chevrolet-Livonia (Cf. PX A-285-1 with PX A-285-2).

Except for a limited use of the Marproof or No-Mar process or certain bumpers during the 1956 model year from December 1956 through August 1963, Pontiac used soap and borax over phosphated steel (often with an additional drawing compound or a lubricant called Molykote) for 100% of its bumper production (APTO, P:7, 9-10; Herrmann, Tr. 4977-4979, 5056). The evidence clearly shows that the reason was the superior performance of Henricks-type lubricants as compared to non-infringing substitutes.

After testing various draw compounds in 1957 including Bonderlube 215 and Montgomery DU 1101 (both without inorganic compounds), Pontiac concluded that Bonderlube 246 (15% borax) "has proven the most satisfactory" for its use (PX A-287; Herrmann, Tr. 5017-5018, 5024; DX A-28-2).

After Pontiac tested Montgomery 2481, it continued to use Bonderlube 249A (APTO, P:9; Herrmann, Tr. 5015). Lubricity was an important consideration in choosing the coating material. One material tested was not slipping out from under the pressure pads and it would cause a break in the metal (Herrmann, Tr. 5017-5018).*

It was Pontiac's general experience that there are differences in the draw characteristics of different draw com-

* The Henricks coating was not causing breakage. It was the steel and Pontiac's Lab so reported (Herrmann, Tr. 5072-5073).

pounds. "[Y]ou cannot put in a change of dies to accommodate the coatings . . ." At the start of the model year it must be decided which lubricant will be used for a given model, because "you can't run a set of dies on a trial . . . so once you start on a coating you are . . . stuck with it . . . [f]or the duration of the model [year]" unless there exists a very similar substitute (Herrmann, Tr. 4996-4997).

Between August 1968 to August 1969, Production Finishing used Non-Accused Practice PP (Bruce's Bruko 27B soap-only over phosphate) to precoat steel furnished by Great Lakes for Pontiac (APTO, P:15). Jones and Laughlin also furnished precoated steel to Pontiac using Bonderlube 243 over phosphate during the 1969 model year in Non-Accused Process OO (APTO, P:4, 12-13).

In summary (except for limited parts made by a non-infringing practice during the balance of the 1956 model year), Pontiac used the Henricks process as its lubricating system for 100% of its bumpers manufactured from December 1955 through the 1968 model year (APTO, P:2-4). The fair inference is that Pontiac found the Henricks process was satisfactory for its bumper manufacturing operating during that period, and was superior for its purposes to the existing non-infringing practices.* I find that to be the fact.

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* But not indispensable. Plaintiffs press for a finding that Pontiac could not manufacture its bumper bomb guards called "Dagmars" without the Henricks process. The evidence plaintiffs rely on is a report concerning the Pontiac bumper bomb guard called "Dagmars" which involved an extremely severe draw, and in which Parker Rust Proof's field man, Mr. Stump, reported that:

> "He [GM Engineer E. Waleryck] told me they [GM] can't do this job without Bonderite & Bonderlube & it is being laid out that way." (PX 86; Vol. 2:86).

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As with Chevrolet, plaintiffs argue that but for Pontiac's use of the Henricks process Pontiac bumpers would have required formation by hot forging or, if cold formed, could not have been flat-polished. I disagree.

While Pontiac felt the Henricks process did a better job than any non-infringing alternative, it does not follow that without Henricks Pontiac would have found itself unable to cold form bumpers, flat-polishing the blank sheet prior to deformation. Henricks' lubricants came to be regarded by Pontiac as more satisfactory, but others would have done the job. On this point it is topical to advert to the testimony of William L. Herrmann. Mr. Herrmann was a senior process engineer at Pontiac, responsible for flat polishing and coating of bumpers (Herrmann, Tr. 4954-4955). He was a credible witness. Mr. Herrman explained that Pontiac was aware of the Oldsmobile and Chevrolet processes, but decided to try to get better results than they had (Herrmann, Tr. 4989). Its experiments resulted in the switch to BL 246 (soap and borax). Mr. Herrmann summed it up this way;

> "The conclusion that we [at Pontiac] reached was in general that they [other lubricants] were not satisfactory for our use, but it didn't mean that we couldn't have used them, but it did mean that with our equipment, with our type of steel, with our ap-

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The writing is double hearsay, neither Mr. Stump nor Mr. Waleryck being available to explain whether the "Bonderlube" referred to was of a type with or without borax or why the lubricant (whatever its content) was especially needed. I will not infer from this fragment of evidence in the shape of a report from one Parker employee to another respecting a customer's planned product use, that General Motors could not make "Dagmars" except by the use of the Henricks process.

> plication, . . . and with our dies as they were, the [BL] 246 was the best material for our use." (Herrmann, Tr. 4989-4990.)

Pontiac liked the Henricks process. It was the first lubricant Pontiac used when it abandoned the messy Marproof lubrication. Pontiac held fast to it after the patent was validated, although substituting for what had been the borax inorganic what I have found to be a TKPP equivalent. Pontiac did not switch out of Henricks until 1968, near the end of the patent's term. And when it did so by the adoption of Non-Accused Practice OO (APTO, P:4), it came to use the Jones and Laughlin Surfa-Glaze steel with special qualities for bumper making. Negotiators for defendant seeking a license would have foreseen the strong preference by Pontiac's production people for the Henricks process. And reasonable negotiators for the patentee would have wanted to come to a royalty rate which would encourage Pontiac to use the process rather than switching over to a non-infringing alternative.

(d) Cadillac Bumpers

From 1952 through the 1958 model year, Cadillac cold formed the outer face bumper parts, only, from steel sheets without flat polishing (APTO, CAD:2). A wet lube was applied to the bare steel at the press; after forming, the parts were cleaned and then polished as necessary (APTO, CAD:2).

During the 1961 model year Cadillac cold formed all of its outer face bumper bars using Non-Accused Practice F, *i.e.*, a wet pigmented drawing compound over bare cold rolled steel; after forming, the parts were cleaned and then polished as necessary (APTO, CAD:3-2).

Before switching to the Henricks process "Cadillac was looking for a perfect finish over the entire bumper" and for that reason most of its operations "were not automated" but

were, unlike anybody else's at the time, "all hand operations" (Sukes, Tr. 2998).

Cadillac switched to the Henricks process in the 1962 model year and utilized it through the 1968 model year (APTO, CAD: 2-5). Thereafter Henricks contributed to benefits in the form of better appearance (Sukes, Tr. 2996-2997), less spot polishing (Priebe, Tr. 3007, 3010), more satisfactory plating (Sukes, Tr. 3001), less rejects (Priebe, Tr. 3007-3008; Sukes, Tr. 3002), and a generally less messy and cleaner production line (Priebe, Tr. 3006; Sukes Tr. 2997, 3000).

From about July-August 1968 onward, Cadillac used Non-Accused Practices C and D consisting of J&L and Great Lakes precoated phosphate and soap-only steel (APTO, CAD:1).

Since Cadillac used the Henricks process as its lubricating system for 100 percent of its bumpers manufactured from the 1962 model year through the 1968 model year (except for limited parts made by a non-infringing practice during that period) (APTO, CAD:3-7), the fair inference is that the Henricks process was more satisfactory for Cadillac's bumper manufacturing operation during that period than non-infringing alternatives.

As with Chevrolet and Pontiac, plaintiffs urge that Cadillac bumpers could not have been flat polished and cold formed without the Henricks process. For reasons previously stated I disagree, and believe that the negotiators would view Cadillac as they would view Chevrolet and Pontiac. The Henricks process was preferred from the 1962 model year to 1968. It did the job, and Cadillac was pleased with it. The negotiators would, therefore, have approached the royalty bargaining with Cadillac willing to pay for the privilege of using the Henricks process, and the patentee seeking a rate which would encourage Cadillac to do so.

(e) Fisher Body — Elyria Bumper Parts

Boiling down the information at APTO, FB:1-5, it appears that from at least 1952, Fisher Body Division — Elyria was cold forming flat-polished steel using Bruko D-9 or Kerns DF 4800 (soap and 68 percent borax, PX A-2a) over bare steel. In 1954 Fisher Body — Elyria added the step of flat polishing the steel before applying the lubricant. The processes used from 1952 to April, 1957 are not accused.

Infringing Practice 36 ran from April 1957 through March 1960. It infringed because it added to the cold forming operation a dip in a borax-containing lubricant. On March 31, 1960, Fisher Body — Elyria discontinued using a phosphate coating and applied the soap and borax lubricant to the flat-polished bare steel. Sometime after November 1962 Fisher Body — Elyria discontinued the use of flat polishing and the use of soap and borax dry film lubricant. Since that time Fisher has applied wet lubricants over bare unpolished steel before cold forming the bumper parts it makes.

Unlike the experience at Chevrolet, Pontiac and Cadillac, where there was evidence of either problem-solving or tangible advantage coincident with the adoption of the Henricks process, the record is vacant as to specific benefits achieved during Fisher Body — Elyria's relatively short use of it. Nevertheless I infer that for the period April 1957 through March 1960 the Henricks process was used because it was thought advantageous. This is the logical, if not the only, inference, absent any evidence from defendant to the contrary.

3. The Usefulness of the Henricks Process in the Making of Non-Bumper Extruded Parts

As with bumpers, plaintiffs argue that but for Henricks, non-bumper parts could not have been extruded. But instead of computing the sales of those parts produced by Henricks,

and applying to the sales figure a per cent royalty, they use as their "royalty base" the savings and gains which they attribute to Henricks when compared with the cost of cold forming or machining the same non-bumper parts.

The risk in plaintiffs' approach has been earlier noted. For bumpers plaintiffs applied a proposed royalty percentage to dollar sales. This permitted a fall-back to a lower percentage if plaintiffs' main submission (that cold forming could only be accomplished by Henricks) were rejected. But for non-bumper parts, no back-up position was supplied. Plaintiffs elected to put all their eggs in one basket, at the bottom of which is the premise that defendant's choice was between cold forming non-bumper parts through Henricks, or not cold forming at all. By computing their royalty claim on a percentage of savings and gains solely on the premise that cold forming could not be accomplished without Henricks, with the failure of the premise the bottom drops out of their savings and gains claim. And there is no secondary position justified by the evidence.

Where the royalty is based upon sales, the "essentiality" of the Henricks process becomes a factor which influences the amount of the royalty percentage, rather than being a *sine qua non* to any royalty award. If the negotiators found that the royalty of 2.4 percent of bumper sales sought by the patentee was too high because the Henricks process was not essential, they could (and would) still take into account the other merits of the patent and its value to the defendant in arriving at a compromise percentage figure. *Cf., Randolph Laboratories v. Specialties Development Corp.*, 213 F.2d 873 (3d Cir. 1954). But that choice is not available where the only proofs relate to savings and gains which themselves would be non-existent if their premise is found to be false.

And false it is. For I find the fact to be that non-bumper parts could be and very often were, cold formed by defendant

without the use of Henricks. Indeed the question does not even seem to me to be a close one. The evidence is that, far from dominating the field, the Henricks process had relatively slight importance to defendant in the production of non-bumper extruded parts.

The Henricks process developed an allegiance in bumper making which it was never to find in extruded parts. Once used to form bumpers, the divisions employing it were reluctant to switch. Thus, there emerged a detectable pattern at the major infringing divisions (Chevrolet, Pontiac and Cadillac) of the use of borax in bumper production until validity was determined, and then of TKPP, for long periods without substantial change.

However, the experience of these divisions in the production of extruded parts is much more of a mixed bag.

(a) Chevrolet — Bay City

Infringing Practice 7 was used from May 1962 through July 1966 for the forming of steering knuckle and other parts by the use still received from suppliers pre-coated with BL 235 (the prior trial lubricant) or BL 239 over phosphate (APTO, CBC:1). The selfsame parts were thereafter made by Non-Infringing Practice 8 which used neither borax nor a borax equivalent. (See pages 55-56, *supra*; also, Non-Accused Practice E, APTO, CBC:1, 8). There is nothing to show that the changeover was other than routine, or that the non-infringing alternatives could not have been used from the beginning.

(b) Chevrolet — Buffalo

Infringing Practice 9 ran from July 1959 to July 1962 at Chevrolet's Buffalo plant. It involved the forming of Pitman arm ball stud seats from blanks furnished by Republic Steel and precoated by that manufacturer with BL 235 (the prior

trial borax lubricant) or BL 239 over phosphate (APTO, CD:1-3). The use of the lubricant was limited in time and isolated.

(c) Chevrolet — Parma

Infringing Practice 16 (APTO, CP:1) saw the making of shafts and levers at Chevrolet's Parma plant with the help of a borax-containing lubricant from July 1963 through March 1969. While that is a durable use of Henricks, Chevrolet — Parma's movement from Infringing Practice 17 to Non-Infringing Practice 18, to Non-Accused Practices K and L (*Ibid.*) runs counter to claims of high value for the patent in non-bumper extrusions. Infringing Practice 17 involved the use of a borax-containing lubricant from 1957 — May 1963 to make universal joint bearing races and propeller shaft ends. Next came Non-Infringing Practice 18 from May 1963 through May 1964, whereby the borax lubricant was abandoned in favor of a soap-only lubricant with a borax neutralizing rinse. Then from May 1964 through October 1968 the borax neutralizer was eliminated from the rinse (Non-Accused Practices K and L). So, while the stability of the use of the Henricks process in Infringing Practice 16 suggests that the borax lubricant was favored, the apparent ease of shifting from an infringing practice to non-infringing practices suggests the opposite.

(d) Delco Electronics

Although Infringing Practice 22 is next numerically, chronologically it was the first of the accused practices. It involved the use of a borax lubricant to make rocket fuse housings and booster cups from August 1952 to February 1954 at Delco Electronics (APTO, DE:1). Except for this instance, there is no charge that Delco Electronics utilized the Henricks process for cold forming. One cannot deduce from Infringing Practice 22 a passion for the Henricks process.

(e) Delco Products

The only process accused at defendant's Delco Products Division is (partly) Infringing Practice 25. It saw the formation of studs and rings from July 1962 — July 1966 with the help of a borax lubricant (APTO, DP:1). The identical parts were made thereafter without the introduction of borax (Non-Accused Practices T and U) (APTO, DP:1, 2). Again the restricted use of the Henricks process at Delco Products, and the evident ease of moving out of it, counter-indicate a high degree of need for the process.

(f) Delco Remy

The division making the most extensive use of the Henricks process was Delco Remy. Infringing Practices 26, 27, 28, 30, and 31 — five of the total of 17 non-bumper processes required to be held infringing by the law of the case — occurred there (APTO, DR:1-2). Yet even Delco Remy seemed to have no trouble moving in and out of borax-containing lubricants. By Non-Accused Practices W, X, Y, and Z (APTO, DR:2-3), the selfsame parts produced by the infringing processes were made without the use of Henricks lubricants.

(g) Diesel Equipment

The only infringing practice at defendant's Diesel Equipment Division is the prior trial practice of making hydraulic valve lifter plungers from 1955 — third quarter of 1958. It is an isolated use (APTO, DE:1).

(h) Fisher Body-Columbus

At Fisher Body-Columbus, Non-Infringing (because cleaning advantage was not used or shown) Practice 33 was used to make window regulator bearing studs and door lock striker pins from 1963 — January 1964. Thereafter some

parts were produced by Non-Infringing Practices 34 and 35 (using borax as a neutralizing rinse), Non-Accused Practice BB (eliminating the borax from the rinse), and Non-Accused Practice CC (lime coated steel) (APTO, FBC:1-8). There was no infringing use by this division.

(i) Inland Division

Infringing Practices 37 and 38 at the Inland Division were used to make ball joint sockets from 1959 — 1966 (APTO, ID:1). Thereafter a soap-only lubricant in Non-Accused Practice EE supplanted the soap and borax used in the infringing practices.

(j) Oldsmobile

Infringing Practice 42 saw the production at Oldsmobile of rocket cones called ogives, and rocket body parts, with the help of a borax lubricant from June 1953 — January 1954 (APTO, O:1). Before this non-borax lubricants were used (Non-Accused Practices II and JJ) (APTO, D:2). Like Delco Electronic's wartime use of Infringing Practice 22, Oldsmobile's short use of the Henricks lubricant does not prove much about its worth.

(k) Pontiac

Pontiac was also in the rocket-making business, using the prior trial BL 235 infringing practice in 1952 and 1953 to make rocket bodies and heads (APTO, P:1). Infringing Practice 47 was the 1954 successor to the prior trial infringing process. These were the only non-bumper practices held to infringe at Pontiac, and their use was of limited duration.

(l) Saginaw Steering

Finally, Saginaw Steering Gear, in Infringing Practices 54 and 56, did use borax-containing lubricants (PX A-2a) to

produce various parts (APTO, SSG:1). Infringing Practice 54, used to make ball joint studs until March 1967, was abandoned in favor of Non-Infringing Practice 55 (borax neutralizer) (APTO, SSG:1). While Infringing Practice 54 was being used, a large fraction of Saginaw's ball joint studs were produced, without apparent difficulty, by Non-Accused Practice RR (APTO, SSG:3 and 27, fn.). Infringing Practice 56 was used to make multiple parts, mostly from 1958 – 1962, many of which were later made by Non-Infringing Practice 57 (borax neutralizer).

* * *

Any but the most fervent advocate would conclude from reviewing the pattern of defendant's non-bumper infringements that Henricks was not the only way it could, and did, cold form parts.

As in other areas of damage law it is of course the case that where a reasonable royalty cannot be precisely proved a fair approximation based on the evidence will suffice. *Faulkner v. Gibbs*, 199 F.2d 635, 639-40 (9th Cir. 1952). However, the proof must be based upon creditable data, not speculation, conjecture or unwarranted assumptions. *Trio Process Corp. v. L. Goldstein's Sons, Inc.*, 533 F.2d 126, 130 (3d Cir. 1976); *Rude v. Wescott*, 130 U.S. 152, 166-167 (1889); *Boesch v. Graff*, 133 U.S. 697, 706 (1890); *Panduit Corp. v. Stahlin Bros. Fibre Works*, 575 F.2d 1152-1162 (6th Cir. 1978). As stated by the Supreme Court in *Rude v. Wescott, supra*, 132 U.S. at 167:

> " . . . [N]o evidence of the value of the invention to the defendants was adduced except the conjectured estimates stated; they furnished no satisfactory basis for any damages, much less data, which authorized the specific finding made as to the damages for each drill used. Opinions not founded on knowledge

> were of no value. Conclusions from such opinions were at best mere guesses. By the decision rendered, a settled rule of law was violated, that actual, not speculative damages, must be shown; and by clear and definite proof, to warrant a recovery for the infringement of a patent . . . "

By relying in their savings-and-gains proof solely on the (erroneous, as I have found) premise that defendant could have cold formed non-bumper parts only through Henricks, plaintiffs have offered no evidence on which a royalty might be reasonably based.

In so concluding I should straight-out say that I am acutely mindful that in a case of this duration every effort should be made to find a way to allow a patentee fair compensation for infringements it has fought so hard to sustain. And I should indicate that in other circumstances I would be left with a sense of malaise at finding no basis in the evidence to sustain an award for non-bumper infringements. But such uneasiness as I might otherwise have felt on the point is softened by the conviction that the usefulness of Henricks in the production of non-bumper parts was relatively minor, and by the decision to give some degree of consideration (albeit not in a quantified way) to the non-bumper infringements in the course of the hypothetical negotiations which come later.*

4. Defendant Used Borax and TKPP in Bumper-Making to Improve the Lubricant, Not Because Those Substances Cost Less than Soap.

Although what is covered here could have been, and to some degree was, discussed in the context of the usefulness of

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* See page 139, *infra*.

Henricks in bumper making, it is made the subject of a separate section to avoid submerging an important issue toward which the parties have directed special attention. The controversy comes about the the following way.

To undercut the value to be accorded by the negotiators to the usefulness of the Henricks process in bumper manufacture, defendant suggests that borax was inserted in its bumper lubricants because borax cost less than soap. It will be remembered that in making non-bumper parts, the amount of borax used by defendant in the lubricant was quite small, and that defendant has from the beginning argued that the borax was inserted as a neutralizer only. Although under the law of the case such lubricants nevertheless infringe, the relatively slight usefulness of the Henricks process in the extrusion of non-bumper parts, and plaintiffs' inability to prove damages as the result of those infringements, do tend to support the notion that the borax in low-borax lubricants was of only small significance in the lubricating process.

But the opposite reasoning applies to bumpers. There relatively large amounts of borax, and later TKPP, were used along with soap to form the lubricant. That being the case, common sense requires the inference, absent a better alternative explanation, that the very purpose of the borax and TKPP was to improve the lubricant. Not insensitive to this problem, defendant seeks to explain the use of large amounts of borax and TKPP in bumper manufacture by suggesting that these inorganics were inserted in the bumper lubricants because they were cheaper than soap. That position is contrary to the evidence, and I reject it.

The only witness defendant was able to find to testify that a switch to a borax-containing lubricant (Kerns 3833) from soap only (BL 215) was made for reasons of cost savings was John J. Kary (Kary, Tr. 7461-7464, 7490). Kary mitigated his testimony on cross-examination (Kary, Tr. 7597-7598). But

to the extent this testimony supports defendant's argument that Chevrolet switched from soap to soap and borax because the latter was cheaper,* I explicitly reject that testimony.

First, witness after witness testified that cost was not significant in selecting a lubricant (Weil, Tr. 3550; Herrmann, Tr. 5098-5103, 4972; Wojtowicz, Tr. 5711-5714; Kary, Tr. 7503-A). There is sense to this, because the lubricant cost is a relatively infinitesimal factor in bumper production. For example the cost of lubricant for annually producing tens of millions of dollars worth of bumpers at Chevrolet was in the neighborhood of $24,000 per year (Kary, Tr. 7598).

Second, Chevrolet never ran any cost studies to determine lubricant costs per bumper (Kary, Tr. 7490) and Kary was unfamiliar with the cost of lubricants used by other bumper plants (Kary, Tr. 7541-7542). If cost of the chemicals had been an important consideration, those costs at other divisions would have been considered.

Third, Mr. Kary's testimony that Chevrolet-Livonia stopped using Bruko 27 soap-only because the Bruko sales people were not aggressive and did not come around to sell the material to Chevrolet-Livonia, is inconsistent with other record evidence (Kary, Tr. 7504-7507; DX A-25), and inconsistent with the "second source" policy upon which he said he relied in earlier trying Montgomery DA 2481 (Kary, Tr. 7465). I believe, and find, that had the Bruko soapy lubricant been as satisfactory as the Bonderlube TKPP lubricant, its use would have been continued.

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* "Chevrolet was not required to go to soap and borax at all. Kary simply wanted to save part of the cost of the lubricant itself. Kary Tr. 7463-4." (Defendant's Comment to Plaintiffs' Proposed Fact Finding 231; also 267, 268).

Fourth, no witness testified that TKPP was cheaper than soap. To the contrary, there was evidence that at Chevrolet the use of TKPP-containing BL 200 was *more* costly than soap-only, or soap and borax (PX A-285-2).

Large amounts of borax and TKPP were used by defendant in its bumper manufacture. Defendant's explanation that the selection of these inorganics was to save lubricant cost is contrived. Indeed the very weakness of its explanation confirms the conclusion that Henricks lubricants were selected by defendant only because they supplied advantages in the production of bumpers.

5. Declination to Treat as Controlling in Fixing a Royalty Certain Transactions Relied on by Defendant

Defendant urges that various of plaintiffs' patent transactions indicate a ceiling for the worth of the Henricks patent. Its contentions will be considered *seriatim*.

(a) The Transfers of Interest in the Patent in 1955 and 1965

On September 10, 1955, Devex assigned the Henricks patent in suit to Messrs. McCoy and TeGrotenhuis* (DX A-1, Item 2). Defendant points out that in effect this agreement valued the patent at $100,000. It urges this a factor to be given controlling, or at least substantial, weight in fixing a royalty now.

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* TeGrotenhuis had worked as an attorney on the patent application (Tr. 4824-4825). He and McCoy were also minority stockholders in Devex (Tr. 4828-4829). He and McCoy prepared the agreement (DX A-1, Item 1). Henricks was then President of Devex and recommended the agreement (*Id.*).

Defendant further contends that plaintiffs in effect assigned a value to the validated patent in 1964, when a one-third interest in the patent (then subject to the exclusive license to Technograph) was sold to sophisticated and knowledgeable lawyers for $50,000, subject to an earlier created right in another (DX A-1, Item 33, last three pages; Tr. 8167-8169). It suggests that this supports a conclusion that the patent had no great worth, since it shows a market price for the patent overall at under $200,000 (DX A-1, Item 3, Article 3(b)).

I do not accept defendant's contention that the conduct of plaintiffs in their *inter sese* dealings respecting the patent should be given significant weight here, much less that it puts a ceiling on the royalty that can be awarded.

The order of the day in this phase of the accounting is to construct hypothetical negotiations to determine a reasonable royalty. It does not advance this endeavor to suggest that plaintiffs are, as defendant has somewhat perjoratively styled them, "patent speculators." True, the interests plaintiffs represent were not acquired with the idea of practicing the invention, but with the purpose of profitting from the business of licensing it. But nothing in the logic of the statute, or any law to which defendant has called attention, suggests that a person who buys an interest in a patent should for that reason receive less from the infringer than the far-sighted genius who conceives the invention, patents it, and then himself licenses it, or who transfers it to the "speculator" at what turns out to be a bargain price. Neither logic nor authority suggests that a "reasonable" royalty should vary depending on the identity of the patent owner or whether he paid fair value for his interest.

A look at the flip side of the argument defendant has coined tends to support this conclusion. If plaintiffs had demonstrably paid for the patent the hundreds of millions of dollars they now seek, defendant would not sanguinely allow

that fact to create a "floor" below which a reasonable royalty could not descend. It would urge that what they paid was an irrelevancy, and that the true endeavor is to allow plaintiffs a fair share of the value of its wrongful use, be that amount great or trivial. That is the only sensible rule.

In so concluding, note should be taken of one very recent decision, relied on by defendant. *Ellipse Corporation v. Ford Motor Company,* 461 F.Supp. 1354, 1361-1362 (N.D. Ill. 1978). There the Court did remark at various transactions, for relatively small sums, in the stock of plaintiff-patentee. Having done so, it observed:

> "Ellipse now proposes the court enter a $55,476,843 judgment against Ford for reasonable royalty under its profit theory plus $41,401,257.90 in interest, or a total just under $97,000,000. This would be a huge windfall on the stockholders' comparatively small investment. It would be grossly unfair under the circumstances of this case to make such an award of damages, plus interest, and grossly unfair to the thousands of stockholders of Ford Motor Company who have invested millions of dollars in the production of automobiles and have contributed to the social and economic development of this nation and the world. Such an award would be inequitable and indefensible both in equity and law under all the circumstances of this case."

Without in any way meaning to disrespect the *Ellipse* Court, having commented on the size of plaintiff's claim when compared with the investment of its stockholders, the Court in no way explains how that investment is legally material to the royalty issue. To the contrary, the decision proceeds after detailed analysis to award damages measured by a reasonable royalty of $656,820.30 based on familiar standards.

In a human sense, of course, there may be a tendency toward irritation at a plaintiff which seeks amounts far in excess of what it can reasonably hope to achieve. I do not suggest that *Ellipse* vents that emotion, since the smallness-of-the-investment against the size-of-the-claim language may well have served some other purpose. But whatever purpose, it is clear that *Ellipse* did not view it as legally material to the reasonable royalty. Neither do I.

(b) The Value Put on the Patent by One of the Owners for Estate Tax Purposes

In this same vein defendant submits (Def. Br., II-K-16; Def. Proposed Finding K-10) that a comparable evaluation of the total worth of the patent ownership occurred in 1970 before knowledge of Judge Wright's decision (DX A-48a, p.3) when William McCoy, Jr., valued his father's one-ninth interest in the patent at $15,000 for Federal Estate Tax purposes (DX A-48, Orig. Ans. to Interrog. A-7c, Item 19, p. 5; DX A-48A, January 1979 amended Ans. to Interrog. A-7c). While the calculation is made more complicated, by reason of other interests, than simply multiplying 9 × $15,000, in rough terms defendant contends (and it is not disputed) that if the McCoy estate tax calculation were binding on plaintiffs it would value the patent at in the neighborhood of $150,000. Defendant seeks to limit plaintiffs to that figure.

Defendant's contention is rejected. If the transfer prices of patent interests are (as I have found in this case) not weighty, then the valuation of the fractional interest of one of the patent owners for estate tax purposes would seem even less significant in fixing a reasonable royalty.

(c) Settlements by Plaintiffs

In 1968 and after a total of nineteen lump-sum settlement agreements were negotiated for amounts ranging from

$2,500 to $250,000 (DX A-1, p.6). The settlements covered damages for past infringement, and those settlements negotiated prior to patent expiration had the effect of licensing all future usage (*e.g.*, DX A-1, Item 20 — Houdaille dismissal). Defendant seeks the benefit of those settlements. (See Def. Proposed Finding K-11.)

Defendant's argument on this point is directly contrary to the holding of the Supreme Court in *Rude v. Wescott*, 130 U.S. 152, 164 (1889). Age has not dulled the sharp reasoning of that decision. Rejecting a master's reliance on payments under threat of suit as proof of damages, the Court observed:

> " . . . It is clear that a payment of any sum in settlement of a claim for an alleged infringement cannot be taken as a standard to measure the value of the improvements patented, in determining the damage sustained by the owners of the patent in other cases of infringement. Many considerations other than the value of the improvements patented may induce the payment in such cases. The avoidance of the risk and expense of litigation will always be a potential motive for a settlement. . . . ."

Here the record is barren of details respecting the factual backdrop of the settlements on which defendant seeks to rely, or why they would be reliably indicative of the value of a reasonable royalty. Since no showing has been made as to how or why plaintiffs' rapprochement with other putative infringers should elude *Rude's* proscription, no weight will be accorded them.

(d) The Formea "License"

Next defendant urges that plaintiffs' licensing efforts and transactions further demonstrate the limited value of a license under the Henricks patent.

In the 1956-57 period, McCoy, Sr. and TeGrotenhuis offered licenses to Houdaille (TeGrotenhuis, Tr. 4864-4865), Standard Steel Spring (Tr. 4881-4882), Pennsylvania Salt (Tr. 4900-4906), and Borg Warner (DX A-37, letter of May 23, 1957). The royalty base was pounds of phosphate, and the only royalty amount stated was two cents per pound. Formea Chemical Corporation either had a license (DX A-6, Item 4; DX A-37, Item 1) at one percent per pound of phosphate (PX A-6, Item 3) or had a binding commitment for the grant of such a license (TeGrotenhuis, Tr. 4840-4849, 4869, 4877).

Relying upon these facts, defendant cites the rule that the patent transactions of the patentee, including patent licenses, license offers, sales and other transactions placing a value on the patent are appropriate considerations in determining the reasonable royalty. *Trio Process Corp. v. L. Goldstein's Sons*, 533 F.2d 126, 129 (3d Cir. 1976); *Randolph Laboratories v. Specialties Development*, 213 F.2d 873, 874-875 (3d Cir. 1954); *Minnesota Mining v. Berwick Industries*, 393 F.Supp. 1230, 1245 (M.D.Pa. 1975), *aff'd*, 532 F.2d 330 (3d Cir. 1976); *General Motors v. Dailey*, 93 F.2d 938, 940 (6th Cir. 1937). It concludes that plaintiffs' licensing efforts and lawsuit settlements in combination with the evidence of their own valuation of the patent in purchases and sales of patent interests and for tax purposes, operate to put a low ceiling on a "reasonable" royalty here (Def. Br., II-K-3 thru 12).

Again, I disagree. While it is clearly the law that an established royalty is strongly material in judicially settling on a post-infringement reasonable royalty, here the license arguably given the Formea Corporation did not create an established royalty. That company was largely owned and controlled by McCoy and TeGrotenhuis who also then owned the patent (TeGrotenhuis, Tr. 4834, 4893). The effort was to vitalize Formea by getting it into the phosphate selling

business through the mechanism of sublicensing its hoped-for customers under the Henricks patent (*Id.* at 4843-4845, 4892-4893). There were no sales of phosphate, and no sublicenses (Def. Br. II-K-12; Tr. 2417). Indeed, it is not even certain that Formea ever formally obtained rights under the Henricks patent (*Id.* at 4843-4845). The reason for the lack of success in licensing was that the patented process was being openly used in the metal-working industry without regard to plaintiffs' rights (TeGrotenhuis, Tr. 4862-4863). These facts fall far short of proving an established royalty. *Faulkner v. Gibbs*, 199 F.2d 635, 638-639 (9th Cir. 1952).

Under such circumstances I decline to give weight to the Formea "license" as bearing on the reasonable royalty to be awarded here.

6. The Royalty Base

Based upon plaintiffs' unsuccessful feint at licensing the patented process based on pounds of phosphate sold by Formea, defendant concludes that the proper basis for measuring a reasonable royalty would be pounds of phosphate used to undercoat the lubricant. (Defendant argues for a penny or two a pound.) (See, Def. Br. II-K-32.)

For the reasons earlier stated, I decline to give any weight to plaintiffs' abortive effort to license the patent on a distress basis while it was being openly ignored by industry based upon the apparent wide belief that it was invalid. See *Trio Process Corp. v. L. Goldstein's Sons, supra; Faulkner v. Gibbs*, 199 F.2d 635 (9th Cir. 1952). Further, I am of the view that the application of a penny figure to pounds of phosphate would not be the approach taken by reasonable negotiators, for it bears no relationship to the value of the patented process. To the contrary, it is an arbitrary selection which might represent a bail-out effort by patent owners trying to salvage a

modicum of value from a patent in disrepute, but not a rational basis on which to license a validated patent.

While not uniformly accepting their testimonial advocacy, on this issue I think plaintiffs' trial experts, George Church and Richard Whiting, have the better approach. In suggesting a reasonable royalty for bumpers, they applied a percentage to sales prices (Church, Tr. 1924-1925; Whiting, Tr. 2656-2657). For reasons which will soon appear I do not accept their percentages. However, their concept of using a percent of sales prices as a royalty base makes sense. It is not unprecedented. See, *e.g., Randolph Laboratories v. Specialties Development Corp., supra; Hartford National Bank & Trust Co. v. E.F. Drew & Co.*, 188 F.Supp. 353 (D. Del. 1960), *aff'd*, 290 F.2d 589 (3d Cir. 1961), *cert. den.*, 368 U.S. 825 (1961). And it gives the patentee a share of the value the use of the patent helped create.

I therefore conclude that a percent of sales price is the appropriate conceptual formulation for the determination of the reasonable royalty to which plaintiffs are entitled here.

7. The 1964 Offer to License

Stepping back for a moment, the statutory provision at 35 *U.S.C.* § 284 requires the award of damages " . . . in no event less than a reasonable royalty. . . ." And the willing-buyer/willing-seller test requires the hypothesis of negotiations such as would lead to that royalty.

In groping toward what royalty would be reasonable, the courts have uniformly indicated that weight should be given to royalty arrangements established between the patentee and third persons in respect of the invention. *Faulkner v. Gibbs*, 199 F.2d 635, 638-639 (9th Cir. 1952); *Union Carbide Corporation v. Graver Tank & Mfg. Co.*, 282 F.2d 653, 668-669 (7th Cir. 1960), *cert. den.*, 365 U.S. 812 (1961); *Marvel*

Specialty Company v. Bell Hosiery Mills, 386 F.2d 287, 290 (4th Cir. 1967), *cert. den.*, 390 U.S. 1030 (1968); *Carter Products, Inc. v. Colgate-Palmolive Company,* 214 F.Supp. 383, 393 (D. Md. 1963); *Amerace Esna Corporation v. United States,* 462 F.2d 1377, 1380 (Ct.Cl. 1972). While the reasonable royalty rate may be set at above the established royalty, as where the established royalty is artificially depressed by defendant's own ongoing infringement, *Trio Process Corp. v. L. Goldstein's Sons, Inc.*, 533 F.2d 126, 129 (3d Cir. 1976), absent such special circumstances the rate " . . . established in this industry as a reasonable royalty . . . " has been accorded great deference. *Randolph Laboratories v. Specialties Development Corp.*, 213 F.2d 873, 875 (3d Cir. 1954).

For reasons previously expressed, in fixing a royalty I have determined not to give weight to various of the transactions concerning the patent argued by defendant as setting a low ceiling. Prices contracted for interests in the patent, the McCoy estate tax valuations, settlements entered into with alleged infringers, and the early Formea arrangement were all found to be of little or no evidential use. They do not prove an established royalty, and I have found that they provide no guidance to hypothetical negotiators.

There is, however, evidence of a different cut.

Starting in November 1964, plaintiffs submitted a proposed form of license (DX A-66a), to each and every company it thought was using the teaching of the Henricks patent (Shortt, Tr. 2144, 2413-2415). The license offer provided for a royalty based on three-fourths of one per cent (.75%) of the net purchasing or sale price of the item so produced, or one per cent (1%) of manufactured cost (DX A-66(a)).

The importance of plaintiffs' offer to license is underscored by its timing. The offer was made in November 1964, and

came just ten months after the validation of the patent by the declination of the United States Supreme Court to grant review. (Certiorari was denied on January 6, 1964. 375 U.S. 971.) Plaintiffs were then on top. If their offer had been universally accepted, it would have resulted in an "established royalty," the existence of which would have made the task of this accounting considerably easier.

Plaintiffs make a point of the fact that their offer was accepted by no one. Indeed it was not. But the lesson to be drawn from this is not that the offer was too low. On the contrary, the fair deduction is that the offer to license for three-fourths per cent of sales (or one per cent of manufactured cost) in 1964 was universally rejected, because the offer was higher than users of the process were willing to accept. See, *Foster v. American Machine & Foundry Co.*, 492 F.2d 1317, 1322 (2d Cir. 1974); see also, *Amerace Esna Corporation v. United States, supra*, at 1379-1381.

As offers to sell have been held helpful in ascertaining fair market value based on willing-buyer/willing-seller principles in the real estate context, so offers to license have been held relevant in ascribing value to a patent. *Pitcairn v. United States*, 547 F.2d 1108, 1118 (Ct.Cl. 1976):

> "As for the offers not translated into actual agreements, the authorities which reject such use (see the cases cited in 4 *Nichols, Eminent Domain*, (3d ed. rev. 1975), §§ 12.311[2] and 12.3113[3]) concern attempts by the condemnee to seek a *higher* award on the basis of offers made by or to him (or to utilize a third-party offer with respect to comparable property to gain a *higher* award). They do not involve an effort by the condemnor to rely on an offer made *by* the condemnee as proof of the value of the property. It is obvious that, although the inherent defects of offers made by condemnee-owners

> prevent the opposite party, the condemnor, from being bound by such offers, there is no reason why the owner himself should not be held to his own offer. In this instance, the post-1946 offers were not casual or *ad hoc* but were circulated 'fairly widely' in the industry. It is appropriate to take them into account and to give them great weight." (Footnote omitted.)

The *Pitcairn* reasoning makes good sense. The establishment of a royalty such as would bear strongly on the hypothetical negotiations requires the coming together of a willing patentee with willing users of the patented process. Plaintiffs' broadly circulated offer to license at three-fourths of one percent of sales (representing what the then willing patentee would accept after the validity of the patent had been chiseled in stone) was the first step in that process. It will be given weight here.

E. The Hypothetical Negotiations

All of the foregoing constitutes the predicate and forms the groundwork for the hypothetical negotiations which would lead to a reasonable royalty. Since the negotiators would be aware of everything that has been found legally and factually in the Infringement section and the preceding parts of the Damages section, those findings and conclusions would have conditioned the bargaining. Taking that as given, and aiming to avoid useless repetition while at the same time saying enough to illuminate the negotiating process as it is hypothesized, I find the following to be the most likely scenario by which the suppositious negotiators would play out their parts.

1. Plaintiffs' opening gambit in the negotiations would be to claim a hefty per cent of bumper sales, based on the same evidence and arguments advanced at trial.

Plaintiffs' trial experts were George Church and Richard Whiting. Both were knowledgeable, experienced lawyers with good credentials in the area of patent license agreements. They figured five per cent of sales was a fair royalty rate for original equipment bumpers (Church, Tr. 1924-1925; Whiting, Tr. 2657).

But original equipment prices would have been hard to prove since bumpers are bolted to a vehicle which carries a single price tag. Hence, plaintiffs relied on dealer replacement (after-market) prices charged by defendant.* These would tend to be higher than original equipment cost of the bumper, had that cost been ascertainable. (The dealer shelf cost of the sum of the parts on an item-by-item basis is greater than the cost of the whole car.) Since plaintiffs sought a royalty in all bumper sales, but had only dealer replacement figures, they felt obliged to adjust their royalty demand downward. Church discounted his 5 per cent suggested reasonable royalty to 2.3 per cent because the sales price figures supplied by defendant were for sales by defendant to its dealers by way of replacement parts, whereas 90 per cent of defendant's actual sales would have been on an attached-to-the-new-car basis at a much lower mark-up (Church, Tr. 1925-1926). Whiting came down from a 5 per cent start to 2.5 per cent for somewhat similar reasons (Whiting, Tr. 2659-2663). Plaintiffs' percentage claim of 2.4 per cent at trial was the in-

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* In view of the difficulty of valuing the bumper as an integral part of a new vehicle, plaintiffs' approach is sensible. Defendant argues that some of the bumpers sold to dealers were sold as assemblies which included in their price items, like brackets, not produced by any accused process. Had defendant offered evidence that tended to show specific deductions properly attributable to aggregate bumper sale prices on account of non-infringing parts, such evidence would certainly have been relevant. But this was not done. As the record now stands, defendant is left with what seems to be a carp at a defect it made no effort to correct.

between of these figures, and that is where plaintiffs' hypothetical bargainer would probably start (Pl. Br. pp. 85, 104).

But both of plaintiffs' experts gave no weight to non-infringing, non-accused alternative processes such as the Oldsmobile process and the early Chevrolet process (Church, Tr. 1949-1950); Whiting, Tr. 2793-2798). Their bullishness about the high value of the accused bumper processes was based on the assumption that the accused processes infringed, and other alternatives were ineffectual (Church, Tr. 1966-1967, 2004, 2089; Whiting Tr. 2812-2816). The negotiators, however, would recognize, as I have found, that Henricks was not essential to General Motors' bumper production.

Alternatives being available, and the patentee desiring to maximize defendant's use of the process so as to gain an optimum in license revenues, the negotiators would move to the discussion of a percentage less than 2.4%.

2. Next the bargainers would consider a royalty figure of three-fourths of one percent of bumper sales. This is what the patentee unsuccessfully sought to establish as a royalty in 1964, and for reasons previously explained, the figure would importantly figure in the bargaining. (See pp. 126-130, *supra*.)

3. Assuming (as I must since it is all the evidence we have) that the bargainers would have before them only dealer-price (and not OEM) bumper sales figures, the bargainers would go through the same discounting process as did Messrs. Church and Whiting in reducing the 5 per cent royalty percentage with which they began to 2.4 per cent which they urged as fair. Supposing, as I do, that what was thought by plaintiffs to be reasonable at trial would have been reasonable at the bargaining table, plaintiffs' negotiator would have reduced

his proposed royalty of three-fourths of one per cent, which would have been applicable had new car bumper prices been available, to a proportionately lower figure to account for the higher prices of dealer replacement bumpers.

The arithmetic would go this way: Plaintiffs' trial experts opined that the use of dealer equipment prices would justify a reasonable royalty of just under half (.48) of that which would have been reasonable had OEM prices been available (2.4% divided by 5% equals .48). This same discount would have been applicable to plaintiffs' 1964 request that industry pay it a royalty of .75% of sales prices, and would have resulted in plaintiffs' offer to license defendant's use for a royalty equal to .36 percent of dealer replacement sales (.48 times .75% equals .36%). That is what plaintiffs' bargainer would seek.

4. The parties would agree that .36 per cent was too high. It is the same, taking into account the reduction for the use of defendant's dealer price figures recognized by plaintiffs' experts at trial, as the .75 per cent offer which was agreeable to no user of the process even after the patent was validated, when it might have been expected that a reasonable offer to license would have at least provoked the interest of industry. But the negotiators would find that it was bringing them closer to agreement.

5. The negotiators would next try to develop parameters within which to closely bargain. In so doing plaintiffs' bargainer would try to strike a figure at which defendant would be encouraged to use the patented process, thus maximizing the return under the license. Defendant's negotiator, for his part, would strive for a figure which would enable it to practice the invention without the pressure of reaching out for non-infringing alternatives. In a sense, then, their endeavor would have broad common ground. Gifted by imputation with knowledge of the facts as I have found them, and ignoring none of them, the negotiators would probably emphasize:

(a) On the one hand, Oldsmobile's ability to produce bumpers without apparent difficulty during the entire life of the patent without the use of the invention, and the intermittent success experienced by defendant's other divisions in doing likewise.

(b) On the other hand, the strong allegiance of Chevrolet, Pontiac and Cadillac to the patented process, and its use at Fisher Body. The negotiators would find especially persuasive the decision by defendant's bumper makers after the patent was validated to try (unsuccessfully as it turned out) to avoid the patent by using TKPP instead of borax in their lubricants, rather than soap-only or the Oldsmobile process.

6. The negotiators would conclude that although defendant could cold form bumpers without the Henricks process, use of that process did have benefits and value which was not inconsiderable, and that certain of its divisions would abandon such use only with great reluctance. While this value would be difficult to quantify, involving as it does a combination of judgmental factors, the strength of the allegiance to Henricks would cause the negotiators to strike a compromise.

7. So guided by the sweet voice of logic the negotiators would strive to fix a range of reason, less than the percentage sought by the patentee but high enough to fairly compensate it, within which to peg the royalty. In striving for the proper range the bargainers would be mindful of their own fallibility, and the delicacy of the judgments involved. Their task would have been made easier had there been a true established royalty, widely accepted and untainted by claims of invalidity or non-infringement. Their concentration would have also centered on the dollars and cents of savings and gains, had they had such information in reliable form. Lacking this, they would do the best with what they had. On that basis, and on the facts and law previously developed, I find that the bargainers would have come to parameters of .18 per cent to

.24 per cent of General Motors dealer priced bumper sales as the lower and upper limits — or the equivalent of a half to two-thirds of the .36 per cent plaintiffs offered (taking this to be the same as their .75 per cent license proposal in 1964, for reasons previously explained).

In so concluding I should indicate that Judge Maris' opinion in *Randolph Laboratories v. Specialties Development Corp.*, 213 F.2d 873 (3d Cir. 1954), has provided special guidance. As here, that case had a long history. It returned to the Court of Appeals for the last time after one of plaintiff's patents (the Minor patent) had been held invalid, and the District Court has awarded a 7 per cent royalty on sales of products produced by use of a second patented invention (the Mapes patent).

The Court of Appeals reversed the 7 per cent award because the royalty set by the court below was based on the premise that the Mapes patent was dominating, a premise found by the Court of Appeals to be erroneous. Left with no royalty rate, and a case too long pending, the Court set about to find a reasonable royalty without remand. It did so in a short and sensible way. The Court noted that the Minor patent was believed to be dominant, and did have an established royalty of 3 per cent before its invalidation. It observed that the device taught by the Mapes patent was superior to its competition, but not dominant. The Court therefore concluded "... that damages [for infringement of Mapes] based upon a royalty of 2 per cent of total sales would be fair and just ...". 213 F.2d 875.

While this case is poles apart from *Randolph Laboratories* on its facts, there are congruities. In *Randolph* there was an established royalty for a patent thought to be dominant before its invalidation. Here plaintiffs by their 1964 offer to license sought to establish a royalty for a patent which they contended was dominant. In *Randolph* the Court itself set the

royalty for a related patent found to be advantageous, but not dominant, at a major fraction (2% vs. 3%) of the established royalty for the dominant patent. It did so in tune with its notions of fairness and justice. Here I have found that the Henricks process was advantageous but not dominant. And I have concluded that the range of royalties within which the hypothetical negotiators would finally bargain would be a half to two-thirds of the .36 per cent plaintiffs offered (the dealer price equivalent to their .75% offer) at a time they believed that their patent was dominant (indeed, a *sine qua non*) in bumper cold forming.

The approach taken by the bargainers in the negotiations hypothesized here (based on the facts and law earlier found) is far more detailed than was possible in *Randolph*. *Cf.*, *Georgia Pacific Corp. v. United States Plywood Corp.*, 318 F.Supp. 1116, 1120 (S.D.N.Y. 1970), *modified*, 446 F.2d 295 (2d Cir. 1971), *cert. den.*, 40 U.S. 870 (1971). But in the end *Randolph* instructs that judgment must be applied to come to a royalty figure which is fair and just where there is an inability to precisely quantify a reasonable royalty. The range of .18-.24 per cent is produced by the exercise of such judgment.

8. Having fixed on the top and bottom marks of the possible royalty, the negotiators would next decide where within those marks to hammer in their stake. In getting down to the short strokes of the bargaining, they would be set in motion toward the high of the .18-.24 per cent range, propelled in that direction by two factors.

First, the negotiators would be moved by what they would note as the persistence of defendant's bumper-making use of Henricks over many years in generally increasing proportions from modest beginnings at Chevrolet, Pontiac and Cadillac. They would regard the upward incline of defendant's appropriation as tending to prove the patent's desirability.

Second, I have no doubt that the bargainers would in real life, and will in the negotiations here hypothesized, give some consideration to the infringements in the non-bumper area for which no separate royalty would be assigned. While admittedly of far less importance to General Motors, easier to rectify, and not expressed in a way translatable into dollars and cents, the non-bumper infringements would be taken into account as a plus on the side of the patentee in settling on where in the range of reason the royalty percentage for bumpers should be fixed.

These factors, in combination, would tilt the negotiators to the top of the range of reason. I find they would select as the reasonable royalty .24 per cent of defendant's bumper sales based on dealer prices.

9. Finally, the bargainers would consider whether to include a provision for interest in the royalty arrangement.* As their clarity of vision would enable them to foresee all the uses made by defendant of the patented process, so they would not be blind to the events which would postpone the patentee's enjoyment of the bargained-for royalty for over twenty years.

Anticipating the possibility (or, as events proved, the certainty) that defendant might withhold payment of royalties earned, the bargainers would include as an integral part of the royalty arrangement a provision for interest. To strike a balance between avoiding the enrichment of defendant for wrongful withholding of amounts due, and compensating the patent holder for the loss of revenues justly owed, the negotiators would agree on a provision for defendant to pay interest (not compounded) at average annual corporate bond yields for each year in which royalties should have been but

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* Discussion of the law applicable to the award of interest appears in the section immediately following.

were not paid. This would roughly equal what the patentee could have earned with reasonable safety on its money had it been promptly paid. It would also approximate defendant's cost of money had it borrowed in the market rather than (in effect) from the patentee.

10. Thus would the hypothetical negotiations conclude. Encapsulating them, the results would be a royalty of .24 per cent of defendant's dealer-sales of bumpers, with interest to the patentee to compensate for the postponed enjoyment of the pecuniary benefits of the invention. I find that to be the measure of the reasonable royalty due from defendant on account of its infringement.

F. Interest

1. Plaintiffs are Entitled to Prejudgment Interest on the Law as well as the Facts.

In the discussion just concluded I have found that plaintiffs are entitled to interest as a matter of fact. Consonant with the hypothetical negotiation concept, rational bargainers would recognize the unfairness of obliging the patentee to bear loss of use of the money to which it would otherwise have been entitled during the twenty-odd year period defendant would refuse to make payment. No other conclusion seems to me plausible but that under such circumstances the parties would have included in the royalty arrangement a provision for interest from the respective dates the licensee ought to have paid royalties to the licensor.

But it is fairly arguable that a fact finding might not foreclose the issue. For there has not been called to my attention any decision where interest running from the date of infringement was awarded because as a matter of fact it would have been bargained for in the hypothetical negotiations. I say this not to apologize for having found that to be

the fact, but to recognize the possibility that a fact-finder may be without power to determine as a matter of fact (even if reasonable persons would agree that *is* the fact) that which could not be done as a matter of law. Because the impact of interest on the award is so large, the issue merits close analysis.

The circumstances under which interest is warranted by virtue of 35 *U.S.C.* § 284 is not a subject of judicial unanimity. Prior to the 1946 amendment (by which the predecessor of § 284 was changed to allow recovery of "damages" only, but not "profits") the general rule seems to have been that where damages were based upon an *established* royalty, interest ran from the date of infringement. However, where damages were based upon a *reasonable* royalty, interest ran from the date the damages were liquidated, absent "exceptional circumstances." *DuPlate Corporation v. Triplex Safety Glass Co.*, 298 U.S. 448, 459 (1936); *Swan Carburetor Co. v. Nash Motors Co.* 133 F.2d 562, 567 (4th Cir. 1943), *cert. den.*, 320 U.S. 762 (1943).

In its 1964 decision in *Afro Mfg. Co. v. Convertible Top Co.*, 327 U.S. 476 (1964), the Supreme Court indicated clearly (although by way of dictum) that by virtue of the 1946 amendment, the Congressional intent was for interest to be recoverable together with damages ". . . from the time infringement occurred . . ." Adverting to the legislative history of § 284, the Court stated:

> "By the 1946 amendment, Act of August 1, 1946, c. 726, § 1, 60 Stat 778, 35 USC (1964 ed.), §§ 67, 70, the statute was changed to approximately its present form, whereby only 'damages' are recoverable. The purpose of the change was precisely to eliminate the recovery of profits as such and allow recovery of damages only.
>
> " 'The object of the bill is to make the basis of recovery in patent-infringement suits general dam-

> ages, that is, any damages the complainant can prove, not less than a reasonable royalty, *together with interest from the time infringement occurred*, rather than profits and damages.' HR Rep. No. 1587, 79th Cong 2d Sess (1946), to accompany HR 5311, at 1-2; S Rep No. 1503, 79th Cong 2d Sess (1946), to accompany HR 5311, at 2." (Emphasis supplied; footnote omitted.) 377 U.S. at 505-506.

Although one might have thought the foregoing expression by the Supreme Court to be dispositively clear, that has not been the case. Some courts have accepted at face value the Supreme Court's pronouncement in *Aro*, and have declared the rule to be that interest awarded under § 284 runs from the date of infringement. *Marvel Specialty Co. v. Bell Hosiery Mills, Inc.* 386 F.2d 287, 290-291 (4th Cir. 1967); *W.L. Gore & Associates v. Carlisle Corp.* 198 U.S.P.Q. 353 (D.Del. 1978); *Corometrics Medical Systems, Inc. v. Berkey Bio-Engineering, Inc.*, 193 U.S.P.Q. 467, 478-479 (M.D. Cal. 1977). Other courts, however, have rejected the quoted *Aro* case as a careless dictum not controlling on the interest question. Those courts have held that the effect of the 1946 amendment was to eliminate the *DuPlate* rule (requiring interest in reasonable royalty cases to run from the date damages are liquidated unless there are "exceptional circumstances") and have declared that the matter is entirely discretionary with the trial judge. *Georgia-Pacific Corp. v. U.S. Plywood-Champion Papers, Inc.*, 446 F.2d 295, 301-302 (2d Cir. 1971); see *General Electric Company v. Sciaky Bros. Inc.*, 415 F.2d 1068, 1076-1077 (6th Cir. 1969). And some courts have continued, even after *Aro*, to apply the *DuPlate* rule. *Wahl v. Carrier Manufacturing Co., Inc.*, 511 F.2d 209, 214-215 (7th Cir. 1975); *Ellipse Corp. v. Ford Motor Co.*, 461 F.Supp. 1354 (N.D. Ill. 1978); *cf., H.K. Porter Co., Inc. v. Goodyear Tire & Rubber Co.*, 536 F.2d 1115, 1124 (6th Cir. 1976).

Of the cases which have regarded an interest award as discretionary, the rationales for the exercise of discretion have been non-uniform and difficult to reconcile. For example, Courts which follow the *DuPlate* rule appear to equate the "exceptional circumstances" under which pre-judgment interest is allowed, with bad faith or wilful conduct such as would justify awarding attorneys' fees or multiple damages. *Ellipse Corp. v. Ford Motor Co., supra*; *Carter Products, Inc. v. Colgate-Palmolive Co.* 214 F.Supp.383 (D. Md. 1963); *cf., H.K. Porter Co., Inc. v. Goodyear Tire & Rubber Co., supra*, (upholding interest award running from date of Master's report in non-wilful infringement case).

Other cases, however, are not so restrictive. In *Tights v. Kayser-Roth Corp.*, 442 F.Supp. 159, 166 (M.D.N.C. 1977), interest was awarded as of the date of infringement where the defendant, although not found to have acted in bad faith,* had infringed with full knowledge of the existence and scope of the patent. The Court concluded that the compensatory purpose of § 284 would not be served unless plaintiff could be placed in the position he would have been in had the defendant paid a reasonable royalty at the time defendant unlawfully used the plaintiff's invention. And in *Abbott v. Barretine Mfg. Co.*, 160 U.S.P.Q. 524, 527 (N.D. Miss. 1968) the Court, without finding justification for multiple damages or attorneys' fees, awarded interest "from the date [damages] would have been received by plaintiffs, but not prior to the date suit therefor was instituted by plaintiff corporation . . . ."**

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* The Court made no ruling in the Opinion as to whether multiple damages or attorneys' fees should be awarded.

** The significance of the date of the filing of suit is not clear from the opinion.

In the instant case it is unnecessary for me to decide which of the many competing rules is the correct one. For this question is controlled, at least in this District, by *W.L. Gore & Associates v. Carlisle Corp.*, 198 U.S.P.Q. 353, 371 (D. Del. 1978), where Judge Wright held:

> "... the law now seems to favor the assessment of compensatory interest on reasonable royalty awards, where necessary to make whole an injured patentee ..."
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> * * *
>
> "The reasonable royalty is an approximation ... [of] the actual royalty which would have been paid had infringer negotiated with Patentee. The clear rule has been that moratory interest on actual royalties illegally withheld is appropriate. *Marvel Specialty Co., supra*, 236 F.2d 287, 290; *Carter Products, Inc. v. Colgate-Palmolive Co.*, 214 F.Supp. 383, 416 (D.Md. 1963). In the contemplation of the law, an infringer is on notice that a periodic payment is expected for his use of the patent. Patentee reasonably may expect to have the use of that money."

But even had *Gore* never been decided, and even were the slate clean for me to write freshly upon, I would rule both as a matter of law and of discretion that interest should run from the date of infringement without regard to whether defendant's behavior warranted multiple damages or attorneys' fees. Any other result would frustrate the compensatory purpose of § 284 and would be inconsistent with the result in other legal settings which are virtually indistinguishable.

First, if there had been an actual license providing for royalties which General Motors had breached, interest on a claim for unpaid royalties would run from the date the

royalties should have been paid. *Gridiron Steel Co. v. Jones & Laughlin Steel Corp.*, 361 F.2d 791 (6th Cir. 1966). And had there been an established royalty, the result would have been the same. *Swan Carburetor Co. v. Nash Motors Co.*, *supra*, and cases cited therein. The purpose of §284 is to compensate the patentee for the royalty to which it would have been entitled, absent the infringement, *i.e.*, to put the patentee in at least as good a position as where there was established royalty. To deny a patentee prejudgment interest puts it in a worse position than patentees receiving actual, or established royalties, for no discernible reason. Such apparent arbitrariness of treatment is unfair and makes no sense.

Second, a rule which would deny prejudgment interest is at odds with the treatment of patentees under the analogous area of the law governed by 28 *U.S.C.* § 1498. Section 1498 is a "condemnation" statute designed to compensate patentees in cases where the United States uses or manufactures the invention "without license ... or lawful right ..." In such cases, the patentee is entitled to sue the United States in the Court of Claims to recover his "*reasonable and entire compensation* for such use and manufacture ..." (emphasis added). Section 1498 is very similar to Section 284, which instead of using the language "reasonable and entire compensation," provides for "*damages adequate to compensate for the infringement*, but in no event less than a reasonable royalty ... together with interest ..." (emphasis added). Although Section 1498 does not explicitly provide for interest, it has long been judicially recognized that interest should be allowed to make the compensation "entire." *Waite v. United States*, 282 U.S. 508, 509 (1931).

Although Section 1498 (like Section 284) does not speak to the question of when interest begins to run, Section 1498 has been judicially construed to allow "delay compensation" from the date of infringement until the date of judgment. *Pitcairn*

v. United States, supra, 547 F.2d at 1120; *Tektronix Inc. v. United States*, 575 F.2d 832, 836-837 (Ct. Cl. 1978). The "delay compensation" has been thought to flow from the statutory mandate that the plaintiff receive "entire and reasonable compensation." *Pitcairn, supra*.

But I do not understand Section 284 to have any different purpose from Section 1498, as far as interest is concerned. In *Hartford National Bank & Trust Co. v. E.F. Drew & Co.*, 188 F.Supp. 347, 349 (D. Del. 1960), *aff'd* 290 F.2d 589 (3d Cir. 1961), *cert. den.*, 368 U.S. 825 (1961), Judge Leahy had the following to say regarding the purpose of interest under § 284:

> "The award of interest, here, is, however, not a punitive device. Allowed interest in this case represents damages for *delay in* payment and *compensation* for use of plaintiff's money that should have been included in withheld annual royalty statements which, of course, were never rendered by the infringer. In short, it is moratory interest and not contract or punitive interest." (Emphasis added; footnote omitted.)

I discern nothing in the cases which suggests why the treatment of delay compensation under Section 284 should be different from its treatment under Section 1498. The two statutes have the same purpose and it would take a sophistic semanticist to detect a difference in their substance. If there is a statutory reason why a plaintiff whose patent is infringed by the United States Government should have interest where a plaintiff whose patent is infringed by a private party should not, I have yet to fathom it.

Third, the underlying premise of a "reasonable royalty" is that of a hypothetically negotiated *contract* between a willing patentee and licensee. The rule in the area of contracts is that where the contractual breach consists of a failure to pay a fixed

or ascertainable monetary value (ascertainable from a standard fixed in the contract) interest is recoverable from the date payment is due. Restatement, *Contracts*, § 337; Restatement (Second) *Contracts*, § 368 (Tent. Draft No. 14, March 1, 1979). A rule allowing prejudgment interest is more consistent with the contractual rationale of a "reasonable royalty" than would be a rule disallowing such interest.

Finally, to the extent that the issue is regarded as purely discretionary, the compensatory purpose of Section 284 is not well served by a rule that would deny prejudgment interest except where the defendant has acted willfully or in bad faith. Prejudgment interest should be awardable even where, as here, the defendant acted in the good faith belief that its behavior was lawful. As stated by the Court in *Swan Carburetor Co. v. Nash Motor Co.*, *supra*, 133 F.2d at 567:

> "... [I]nterest in the case at bar should run from the dates when royalties should have been paid after the beginning of the accounting period. The District Judge found that the defendant made use of the Swan manifold in the bona fide belief that it was guiltless of infringement, and did not have certain knowledge that it was violating the plaintiff's rights until November 5, 1930, when the final decision in *General Motors v. Swan Carburetor Co.*, 6 Cir., 44 F.2d 24, was rendered. Hence the District Court thought that it would be equitable to calculate interest from that date, especially as the defendant prior thereto had ceased its infringement. These considerations are not without weight but in our view they should not control the decision. The defendant, having received due notice from the patent owner that it intended to insist upon its rights, deliberately continued to make use of the invention after the issue of the patent, and took the risk, now

> resolved against it by the decisions of the courts, that the patent might be declared valid. Manifestly this infringing use was a wrong from which the tort feasor should not be allowed to profit by being placed in a a better position than the manufacturers who respected the owner's rights and paid for licenses under the patent. We cannot accord to a patent infringer the privilege of using a patent, while unsuccessfully challenging its validity in the courts, and exempt him from the burden of paying the recognized price for his delay in meeting his obligations."

From the mid-1950's to now the patentee has been deprived of revenues justly due on account of defendant's appropriation. Meantime defendant, which fought hard but unsuccessfully to resist plaintiffs' claims, has had the use of monies rightfully belonging to plaintiff. To disallow interest would be to beatify that inequitable result. I have earlier found that as a matter of fact hypothetical negotiators would, foreseeing the long delay in payment, include a provision for interest as part of the reasonable royalty arrangement. I further conclude, for the reasons stated above, that both as a matter of law and as a matter of discretion, prejudgment interest should be awarded on account of the infringements as they occurred.

2. The Interest Computation

It appears to be the practice of the Court of Claims to award interest at prevailing commercial rates as the only way to provide "reasonable and entire compensation." *Pitcairn v. United States*, 547 F.2d 1108 (Ct. Cl. 1976); *Tektronix v. United States*, 552 F.2d 343 (Ct. Cl. of 1977). The Court of Claims in the above-cited cases chose the corporate bond rate as the prevailing commercial rate. Because corporate bonds

are generally low risk and average yield investments, on the facts and law here, this standard seems a fair choice.*

The parties early on stipulated to the prevailing corporate bond rates (as shown in "Moody's Industrial Manuals and Moody's Bond Record Monthly as the Moody's corporate bond yield composite averages") during the period from GM's first infringement down through December 31, 1977 and "for subsequent years they shall be computed in the same manner and pro rata for part of a year" (Stipulation dated November 29, 1978). The stipulation contained these rates:

Year for which Royalties Awarded	Accumulated Simple Interest Factor to 12/31/77 (at prevailing rate)
1956	133.68
1957	128.47
1958	125.31
1959	120.66
1960	115.93
1961	111.27
1962	106.65
1963	102.15
1964	97.57
1965	92.94
1966	87.60
1967	81.78
1968	75.27
1969	67.91

* While arguing against plaintiffs' entitlement to prejudgment interest, to the extent interest is allowable defendant does not strongly oppose the prevailing rate approach. (Oral Argument of 11/14/79 at Tr. 219-221). That approach is not new to this District. *Hartford National Bank & Trust Co. v. E.F. Drew & Co.*, 188 F.Supp. 347 (D .Del. 1960), *aff'd*, 290 F.2d 589 (3d Cir. 1961), *cert. den.*, 368 U.S. 825 (1961).

Plaintiffs' post-trial memorandum on the point showed an interest calculation on the same basis *(Moody's* corporate bond yield composite) for the calendar year 1978 of 9.07 per cent. In their pre-oral argument presentation plaintiffs submitted, with supporting excerpts from *Moody's*, that prevailing corporate bond rates would have yielded an investor an 8.15 per cent return through the first ten months of 1979. The 8.15 per cent represents five-sixths (1/1/79 - 10/31/79) of 9.775 per cent which is the average of *Moody's* corporate bond annual yield composite averages for the first nine months of 1979 as follows:

January	9.65%	June	9.81
February	9.63	July	9.69
March	9.76	August	9.74
April	9.81	September	9.93
May	9.96		

See Appendix to Volume I of plaintiffs' interest presentation, pages 2-6.

While plaintiffs' figures even now need updating, and this, when done, will eliminate the need to estimate October's rate on the basis of the prior nine months' average, defendant has neither disputed plaintiffs' numbers nor the way in which they were calculated. Hence, while the interest to which plaintiffs are entitled will need to be fine-tuned by a bring-down of the *Moody* figures to the date of final order, as the record now stands I accept plaintiffs' figure and award interest for the period January 1-October 31, 1979 at the rate of 8.15 per cent.

Thus, to the interest figures in the parties' stipulation, which had provided rates through 1977, there should be added 9.07 per cent to cover 1978, and 8.15 per cent for the first ten months of 1979. Adding 17.22 per cent to the stipulated

commercial rates produces the following interest factors through October of 1979:

Years for which Royalties Awarded	Accumulated Simple Interest Factor to 10/31/79 (at prevailing rate)
1956	150.90
1957	146.69
1958	142.53
1959	137.88
1960	133.15
1961	128.49
1962	123.87
1963	119.37
1964	114.79
1965	110.16
1966	104.82
1967	99.00
1968	92.49
1969	85.13

G. Accounting

1. Introduction

From the findings made to this point, the accounting becomes an arithmetic calculation. For simplicity of understanding a division-by-division approach will be used, with a breakdown to infringing bumper practices within each division year by year. The formulation will identify sales volume for each such infringing practice, apply to those volumes the .24 per cent royalty hypothetically struck, and add interest. That being the conception, the accounting follows:

2. Chevrolet

The sales value* for the 94,523,568 bumper parts that Chevrolet produced by infringing practices (APTO, CL:10), and the reasonable royalty thereon calculated at .24%*, is as follows:

Infringing Practice	Year	Sales Value	Reasonable Royalty at .24%	Interest Rate (%)	Interest	Total Royalty and Interest
12	1958	$ 19,087,556	$ 45,810.10	142.53	$ 65,295.14	$ 111,103.24
12	1959	96,133,986	230,721.60	137.88	318,118.94	548,840.54
12	1960	98,893,537	237,344.50	133.15	316,024.20	553,368.70
12 & 13	1961	57,519,264	138,046.20	128.49	177,375.56	315,471.76
12	1962	119,068,270	285,763.80	123.87	353,975.62	639,739.42
12	1963	142,194,546	341,266.90	119.37	407,370.30	748,637.20
12	1964	134,261,986	322,228.80	114.79	369,886.44	692,115.24
12 & 14	1965	88,287,411	211,889.80	110.16	233,417.80	445,307.60
14	1966	84,485,105	202,764.30	104.82	212,537.54	415,301.84
14	1967	123,524,669	296,459.20	99.00	293,494.61	589,953.81
14	1968	129,074,863	309,779.70	92.49	286,515.24	596,294.94
14	1969	136,728,881	328,151.70	85.13	279,355.54	607,507.24
		$1,229,261,074	$2,950,226.60		$3,313,364.93	$6,263,591.53

* Sales value, on this chart and the charts which follow it, represents the total number of bumper parts produced by infringing practices times the unit selling prices to GM dealers, even though in fact only about 10% of the bumpers produced were sold to dealers. The remainder were sold as original equipment on automobiles. As previously noted, the only selling price available for these parts is GM's selling price to its dealers. The sales value figures on the above stated premises were agreed to by the parties (APTO, CL:10).

For purposes of clarity it should be said that relatively little of the 1961 infringement stemmed from Infringing Practice 13, the use of Pennwalt Drawcote 1047 (APTO, CL:1). Most of it resulted from the use of Kerns 3833, Infringing Practice 12 *(Ibid.)*. The allocation of the $138,046.20 royalty for 1961 breaks down to $129,929.10 for Infringing Practice 12 based on the use of 12,800 pounds of lubricant Kerns 3833 (94.12% of the total lubricant) and $8,117.10 for Infringing Practice 13 based on the use of 800 pounds of lubricant Drawcote 1047 (5.88%) (APTO, CL:8).

For 1965 in the breakdown between Infringing Practices 12 and 14, $21,949 was allowed for Infringing Practice 12 based on the sales value of $9,145,410 from the use of lubricant Kerns 3833 (2,400 pounds), and $189,940.80 for Infringing Practice 14 based on the sales value of $79,142,001 from the use of lubricant Bonderlube 200 (18,980 pounds) (APTO, CL:10).

3. Pontiac

Parallel with the Chevrolet calculations, the sales value for the 22,080,159 bumper parts that Pontiac produced by infringing practices (APTO, P:18), and the reasonable royalty thereon calculated at .24%, with interest added, is as follows:

Infringing Practice	Year	Sales Value	Reasonable Royalty at .24%	Interest Rate (%)	Interest	Total Royalty and Interest
Prior Trial Prac. and 48	1956	$ 20,851,713	$ 50,044.10	150.90	$ 75,516.55	$ 125,560.65
Prior Trial Prac.	1957	38,324,037	91,977.70	146.69	134,922.09	226,899.79
Prior Trial Prac.	1958	26,563,654	63,752.80	142.53	90,866.87	154,619.67
Prior Trial Prac. and 49 and 51	1959	41,858,559	100,460.50	137.88	138,514.94	238,975.44
51	1960	48,175,964	115,622.30	133.15	153,951.09	269,573.39
51	1961	31,052,362	74,525.70	128.49	95,758.07	170,283.77
51	1962	48,488,559	116,372.50	123.87	144,150.62	260,523.12
51	1963	55,404,795	132,971.50	119.37	158,728.08	291,699.58
53	1964	75,490,002	181,176.00	114.79	207,971.93	389,147.93
52 and 53	1965	87,528,591	210,068.60	110.16	231,411.57	441,480.17
50, 52 and 53	1966	85,281,475	204,675.50	104.82	214,540.86	419,216.36
50, 52 and 53	1967	81,750,445	196,201.10	99.00	194,239.09	390,440.19
50, 52 and 53	1968	94,055,341	225,732.80	92.49	208,780.27	434,513.07
Totals		$734,825,497	$1,763,581.10		$2,049,352.03	$3,812,933.13

Again, for clarity, the breakout of the 1959 royalty figures should be shown. The reasonable royalty of $100,460.50 for that year combines $33,486.80 allocated to the prior trial infringing practices (and the related Infringing Practice 48) based on the sales value of $13,952,827 from the use of lubricant Bonderlube 246 (APTO, P:18, 9), and $66,973.70 allocated to Accused Practices 49 and 51 based on the sales value for seven months (January - July 1959) of $27,905,732 from the use of lubricants Parker PTD 1239A and Bonderlube 249A (APTO, P:18, 9). The reasonable royalty of $66,973.70 is, based on the period of use by Infringing Practices 49 (2 months - ⅞ths) and 51 (5 months - ⅞ths), prorated as follows: Infringing Practice 49, $19,135.30, and 51, $47,838.40. Infringing Practices 50, 52 and 53, all involving the use of Parker TKPP-containing lubricants, are combined for the years 1964-1968 although they were used at overlapping times during that period because no purpose is served by separating them.

4. Cadillac

Again on the same basis as the Chevrolet figures, the sales value for the 11,528,284 bumper parts that Cadillac produced by infringing practices (APTO, CAD:8), and the reasonable royalty thereon calculated at .24%, with interest added, is as follows:

Infringing Practice	Year	Sales Value	Reasonable Royalty at .24%	Interest Rate (%)	Interest	Total Royalty and Interest
4	1959	$ 6,075,278	$ 14,580.70	137.88	$ 20,103.87	$ 34,684.57
—	1960	—	—	—	—	—
5	1961	2,661,690	6,388.10	128.49	8,208.07	14,596.17
5	1962	52,238,582	125,372.60	123.87	155,290.04	280,662.64
5	1963	39,953,219	95,887.70	119.37	114,461.15	210,348.85
5 & 6	1964	43,674,508	104,818.80	114.79	120,321.50	225,140.30
6	1965	48,561,410	116,547.40	110.16	128,388.62	244,936.02
6	1966	59,610,782	143,065.90	104.82	149,961.68	293,027.58
6	1967	62,425,675	149,821.60	99.00	148,323.38	298,144.98
6	1968	68,231,343	163,755.20	92.49	151,457.18	315,212.38
Totals		$383,432,487*	$920,238.00		$996,515.49	$1,916,753.49

* The individual items shown in the pre-trial order were added to total $383,432.587. The total appears to be $100 off the mark.

5. Fisher-Body Elyria

Finally, the sales value for the 2,905,425 bumper parts that Fisher-Body Elyria produced by infringing practices (APTO, FB:10), and the reasonable royalty thereon calculated at .24%, with interest added, is as follows:

Infringing Practice	Year	Sales Value	Reasonable Royalty at .24%	Interest Rate (%)	Interest	Total Royalty and Interest
36	1957	$ 7,856,454	$18,855.50	146.69	$ 27,659.13	$ 46,514.63
36	1958	15,160,154	36,384.40	142.53	51,858.69	88,243.09
36	1959	11,284,448	27,082.70	137.88	37,341.63	64,424.33
36	1960	6,286,467	15,087.50	135.15	20,390.76	35,478.26
Totals		$40,587,523	$97,410.10		$137,250.21	$234,660.31

6. Summary

Division	Infringing Practices	Reasonable Royalty	Interest Thru 10/31/79	Total Royalty and Interest
Chevrolet	12, 13, 14	$2,950,226.60	$3,313,364.93	$ 6,263,591.53
Pontiac	Prior Trial			
	48, 49, 50, 51, 52, 53	1,763,581.10	2,049,352.03	3,812,933.13
Cadillac	4, 5, 6	920,238.00	996,515.49	1,916,753.49
Fisher-Body Elyria	36	97,410.10	137,250.21	234,660.31
Grand Total of Accounting		$5,731,455.80	$6,496,482.66	$12,227,938.46

IV. CONCLUSION

The foregoing constitutes the report of the special master, submitted to the parties and filed with the Clerk as provided for at F.R.C.P. 53(e).

/s/ Bruce M. Stargatt
Special Master

Dated: February 7, 1980

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

DEVEX CORPORATION, et al.,
Plaintiffs,

v.

Civil Action
No. 3058

GENERAL MOTORS CORPORATION,
Defendant.

OPINION

August 22, 1980
Wilmington, Delaware
WRIGHT, Senior Judge

Devex Corporation ("Devex") seeks more than $100 million actual damages, plus punitive damages, interest, attorneys' fees and costs for infringement by General Motors Corporation ("G.M.") of Claim 4 of Devex's patent[1] for a process to pressure-form metal objects.

This case began in 1956-57 when Devex sued G.M. and Houdaille Industries, Inc. in the Northern District of Illinois. In 1962, Judge Edwin A. Robson ruled that Claim 4 of Devex's patent was invalid.[2] A year later, however, the Seventh Circuit Court of Appeals reversed and held that

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[1] Reissue Patent No. 24,017 issued to Devex's assignee John A. Hendricks on June 7, 1955, on Original Patent No. 2,588,234, dated March 4, 1952, based on an October 31, 1950 application.

[2] Principal Documents on Accounting, No. 2.

Claim 4 was valid.[3] The Supreme Court denied G.M.'s motion for review.[4] G.M. and Devex then moved their dispute here. Following trial, this Court found that three of G.M.'s accused practices did not infringe Claim 4,[5] a finding that the Third Circuit Court of Appeals reversed on appeal.[6]

This Court subsequently appointed a Special Master, Bruce M. Stargatt, Esquire, who worked hard, long and well to determine which of G.M.'s other accused practices infringed Claim 4 and to set a reasonable royalty that G.M. should pay for its infringement. With the Master's guidance, the parties took dozens of depositions, propounded and answered hundreds of interrogatories and produced thousands of documents. A hearing followed, consuming fifty-three days between October 30, 1978 and February 14, 1979. Following briefing and argument, the Master released his report on February 7, 1980. Presently before this Court are the parties' Exceptions to the Report of the Special Master.

THE INVOLVED PROCESS

Claim 4 covers:

> The process of working ferrous metal which comprises forming on the surface of the metal a phosphate coating and superimposing thereon a fixed film of a composition comprising a solid meltable organic binding material containing distributed there through a solid inorganic com-

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[3] Devex Corp. v. General Motors Corp., 321 F.2d 234 (7th Cir. 1962).

[4] Devex Corp. v. General Motors Corp., 375 U.S. 971 (1964).

[5] Devex Corp. v. General Motors Corp., 316 F.Supp. 1376 (D.Del. 1970).

[6] Devex Corp. v. General Motors Corp., 467 F.2d 257 (3d Cir. 1972).

> pound meltable at a temperature below the melting point of the ferrous metal phosphate of said coating and having a hardness not exceeding 5 on the Mohs' hardness scale, and thereafter deforming the metal.

As the Master noted: "The 'organic binding material' contemplated by the patent is soap. The 'inorganic compound' is borax, or some other inorganic substance meeting the patent's claims and performing the same function as does the borax."[6]

The happy result of this process is that phosphate, soap and borax work to lubricate the pressure-forming operation, preventing harmful contact between the metal products and the machinery with which they are formed. Although other lubricants may be used, the phosphate, soap and borax combination is especially beneficial because it may be easily cleaned from the metal product following its formation.

THE MASTER'S FINDINGS

The Master first found that, from among G.M.'s approximately sixty allegedly infringing practices, practices 4-5, 7, 9, 12-13, 16-17, 22, 25 (in part), 26-28, 30-31, 36-38, 42, 47-49, 51, 54 and 56 all clearly infringed Devex's patent. In addition, the Master found that chemicals tetrapotassium pyrophosphate (TKPP) and trisodium phosphate (TSP) were borax equivalents. Thus, the Master found that the use of phosphate, TKPP and soap in accused practices 6, 14, 50 and 52 infringed Claim 4. He found that the remaining practices did not infringe Claim 4 for a variety of reasons.

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[6] Report of Special Master (hereinafter "Master's Report"), p. 7.

First, the Master held that Claim 4 included a requirement that products be cleaned following their formation. Because accused practices 2, 3, 10, 11, 15, 19-21, 25 (in part), 33-35, 39-41 and 44-45 included little or no cleaning, he found that th[illegible] processes did not infringe. Second, the Master held t[illegible] Claim 4 included a requirement that borax be used as a lubricant and/or as a cleaning agent. Because Devex failed to show that borax was used for either of these purposes in accused practices 1, 2, 8, 18, 20, 23-24, 29 (in part), 32, 34-35, 39, 43, 55 and 57-58, he found them to be non-infringing. Finally, the Master rejected accused practice 1 (after 1963), 8 and 46 because Devex failed to show that these processes in any way involved the use of borax or its equivalents.

The Master next assessed damages for the infringing practices. In many of these practices, including 4-6, 12-14, 36 and 48-53, G.M. manufactured bumper parts. In setting royalties for these practices, the Master first noted Devex's industry-wide offer, made soon after the Supreme Court declined to review the Seventh Circuit's determination that Claim 4 was valid, to license in return for a royalty of 0.75% of the value of the products manufactured by the use of Claim 4. Although the parties failed to present direct evidence regarding the value of G.M.'s bumpers in the mounted-on-the-car form in which they were usually sold, Devex did present evidence of the price at which G.M. sold its bumpers as parts. Devex's experts next argued, and the Master found, that bumpers on their mounted-on-the-car form should be valued at about 48% of the price at which G.M. sold them as parts. The Master, thus, calculated that the value of the approximately 130 million bumper parts formed by using the process of Claim 4 totalled about $1.15 billion. Multiplying this figure by 0.75%, the Master found that the price of Devex's 1964 offer totalled $8,607,183.70. The Master then found that through subsequent negotiations, the parties

would have reduced this figure by one-third, to about $5.7 million.

The Master further found that G.M. would have agreed to pay interest at a composite corporate bond rate for the use of the royalty monies over the many years since its initial infringement.[7] Accordingly, the Master increased his assessment by about $6.5 million, arriving at a total figure of about $12.2 million, as damages for G.M.'s use of the Claim 4 process to manufacture bumpers.

G.M. also used the infringing process to manufacture other products besides bumpers. The Master, however, ruled that Devex failed to adduce sufficiently reliable evidence regarding a reasonable royalty for the manufacture of these products. Therefore, the Master found that Devex was not entitled to recover anything for G.M.'s use of the Claim 4 process to manufacture products other than bumpers.

The Master refused to award multiple damages, or attorney's fees, finding that G.M.'s infringement was insufficiently aggravated.

PLAINTIFFS' OBJECTIONS TO THE MASTER'S FINDINGS[8]

Devex first seeks to widen the scope of infringing processes to include processes in which metal was treated with

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[7] For the actual method of computation, which the Court hereby approves, *see* Master's Report, p. 153.

[8] In considering the parties' objections, the Court is particularly mindful of the presumption of validity normally attaching to a Master's factual findings. Unless such findings are shown to be clearly erroneous, they

continued on next page

phosphate, soap and borax and pressure-formed, although the process did not include any cleaning operation. Devex argues that Claim 4 does not require cleaning. Rather, Devex argues the fact that metal products may be easily cleaned following their formation was an incidental benefit. Devex further argues that the "user of a patented invention does not avoid infringement by failing to utilize all the benefits of the invention."[9]

Plaintiffs' argument misinterprets the import of the earlier decisions in this and related cases, holding that Claim 4 requires cleaning as an integral step of its process. The Court particularly notes the Seventh Circuit's July 12, 1967 decision in *Devex Corp. v. Houdaille Corp.*, 382 F.2d 14. That case is especially relevant, even though Devex and G.M. had previously moved their dispute from the Seventh Circuit, because it interprets the Seventh Circuit's 1963 decision rendered while the dispute between G.M. and Devex was still before that Court. The background to the 1967 case is that, in 1965, Judge Robson granted summary judgment in favor of Devex on the issue of infringement. The lynchpin of Judge

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must be accepted. Federal Rules of Evidence 53(e)(2); W. L. Gore & Associates, Inc. v. Carlisle Corp., 198 U.S.P.Q. 353 (D.Del. 1978). "A finding is 'clearly erroneous' when although there is evidence to support it, the reviewing court on the entire evidence is left with the definite and firm conviction that a mistake has been committed." United States v. United States Gypsum Co., 333 U.S. 364, 395 (1948). Of course, the "clearly erroneous" standard does not apply to the Master's legal conclusions which "have no effect except to the extent they are correct propositions of law." 5A J. Moore, Federal Practice ¶53.12[5] (2d Ed. 1980).

[9] Brief In Support Of Plaintiffs' Exceptions to The Special Master's Report (hereinafter "Plaintiffs' Brief"), p. 181.

Robson's decision, reported at 148 U.S.P.Q. 74, was that Claim 4 should be literally interpreted. Although Claim 4 was and is very broad, Judge Robson refused to "read into the claim a requirement" that would limit its scope. *Id.*, p. 77.

On appeal, the Seventh Circuit held that their 1963 "decision requires that the claim in suit be given a narrow and restricted construction."[10] The Seventh Circuit Panel then reviewed the setting for its prior decision:

> [I]t was conceded that all of the elements of the claim were old in the art, but plaintiffs sought to uphold validity upon the basis that such elements "were put together in a new way and achieved a new and unexpected result." It was solely on this basis that this Court sustained validity and reversed the District Court.
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> . . . .
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> Thus, having obtained a decision of validity on a narrow and restricted basis, they now contend, inconsistently we think, that the claim must be applied literally to defendant's alleged infringing process. Such a construction would monopolize the whole broad field of metal forming with any use of a dry soap and borax over phosphate at any temperature or pressure, regardless of the results.[11]

Clearly, then, the Seventh Circuit contemplated that Claim 4 should be afforded a more limited interpretation than its literal reading might otherwise suggest. The Third Circuit expressly recognized the applicability of the Seventh Circuit's findings, ruling that "[C]laim 4, even as restricted and held valid in the Seventh Circuit, covers and protects the combina-

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[10] Devex Corp. v. Houdaille Corp., 382 F.2d 17, 22 (7th Cir. 1967).

[11] *Id.*, pp. 22-23.

tion of soap and borax . . . so that the process will yield its claimed advantages."[12]

The Seventh Circuit contemplated that cleaning metal products would be required as an integral part of Claim 4. Devex's patent involved a combination of well-known and often-used parts. One prior art patent disclosed the use of a phosphate coating. Another patent disclosed the use of lubricants containing soap and borax and a prior art publication disclosed the use of a soap lubricant over a phosphate coating.[13]

Judge Robson's 1962 opinion recognized that a new combination of old elements may be patentable, but only if it "achieves new and surprising results, or stated differently, the whole exceeds the sum of the parts."[14] Subsequent opinions by both the Seventh and the Third Circuits repeated this test.[15] Devex's problem then was to articulate the new and surprising result of its process. To this end, Devex stressed how easily the products of its process, once formed, might be cleaned.[16] This result contrasted with the results of other processes, which, while showing an acceptably high level of lubrication, caused zinc stearate to form on and adhere to the surface of the formed product. Since zinc stearate is insoluble in water, it can be removed only through difficult, time consuming and expensive cleaning.

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[12] Devex Corp. v. General Motors Corp., 467 F.2d 257, 262-3 (1972).

[13] Principal Documents on Accounting, No. 2.

[14] *Id.*

[15] Devex Corp. v. Houdaille Industries, Inc., 382 F.2d 17, 22 (7th Cir. 1967); Devex Corp. v. General Motors Corp., 467 F.2d 257, 258 (3d Cir. 1972).

[16] Principal Documents on Accounting, No. 2A, No. 3A.

The primary importance of Devex's process was not that the addition of borax somehow enhanced lubricity. Rather, the addition of borax inhibited the formation of zinc stearate resulting in products that could be easily cleaned. Devex thus relied upon the case of cleaning to defend the validity of what would otherwise have been an overly broad claim.

Devex claims, however, that "it is clearly established that a Court may not add limitations to claims in order to make them patentable. *Graver Mfg. Co. v. Linde Co.*, 336 U.S. 271, 277 (1949)." Where Claim 4 did not literally impose a requirement of cleaning, Devex argues, courts were powerless to impose one.

Devex's reliance on *Graver Mfg. Co.* is misplaced. On reargument, the Supreme Court clearly rejected "as subordinating substance to form" the rule of literalism which Devex now seeks to resurrect. Indeed, *Graver Mfg. Co.* specified a thorough review of all available interpretative aids and a number of cases have accepted this direction. Chisum, Patents §18.04[4] (1980). *See e.g. Huntman Stabilizer Corp. v. General Motors Corp.*, 144 F.2d 963 (3d Cir. 1944). Although courts may not rewrite patent claims, they may interpret them so as to avoid a finding of invalidity.[17] Neither precedent nor logic dictate that a claim which has been narrowly construed in order to survive a validity determination should be interpreted more broadly when it comes to determining what practices violate its coverage. Accordingly, the Court accepts the Master's finding that "[p]ractices as to which little or no cleaning was required do not infringe" Claim 4.

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[17] Application of Prater, 415 F.2d 1393 (C.C.P.A. 1969); Huntman Stabilizer Corp. v. General Motors Corp., 144 F.2d 963 (3d Cir. 1944).

Devex next attacks the Master's conclusion that practices applying borax as a rinse to phosphate coated metal and then applying soap were non-infringing. The Master claimed that this conclusion was supported by several considerations, all of which must be rejected.

The Master first found that "there was not a shred of evidence that borax (or equivalent) rinses were employed for the purpose of enhancing either the lubricity of the work-piece, or its post-formation cleanability. Rather, the Master concluded "[T]he record as a whole demonstrates that the only purpose of the borax in the accused rinse processes was to neutralize acid carryover from the phosphate bath."[18] The Master also considered the beliefs of Devex, its assignor and G.M. regarding the purpose for using borax rinses.[19] The history of this litigation, however, shows the fallacy of considering the reason why Claim 4 specifies the use of borax. In an earlier opinion, this Court carefully reviewed involved chemical principles, considering the purpose for which Claim 4 required the use of borax. This Court then concluded that G.M. had not infringed Claim 4 because Devex had failed to demonstrate that GM's purpose in using borax matched the purpose for which its use was specified in Claim 4.[20] On appeal, the Third Circuit rejected this approach, ruling: "[I]f it is directly determinable that the two lubricants have essentially the same components, are applied in the same way and that the results of their use are essentially the same, the disputation of chemists about the chemical interactions that occurred in the processes cannot be decisive."[21]

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[18] Master's Report, p. 46.

[19] *Id.*, pp. 48-51.

[20] Devex Corp. v. General Motors Corp., 316 F.Supp. 1376, 1383-86 (D.De. 1970).

[21] Devex Corp. v. General Motors Corp., 467 F.2d 257, 261 (3d Cir. 1972).

In applying this test, the Court first notes the similarity between the borax rinse processes and the other processes in which borax was used as an integral part of metal forming. In both processes, phosphated metal was dipped in a borax solution,[22] treated with soap, formed, and, in some cases, cleaned with good results. To the extent that the borax rinse processes involve cleaning, then, they meet the Third Circuit's test of infringement. To the extent that these processes do not involve cleaning, they do not infringe Devex's patent, but only because they do not involve cleaning.

The Master next assumes the position that file wrapper estoppel prevents Devex from accusing the G.M. processes that involve a borax rinse. Under this doctrine, a patentee cannot later claim what the Patent Office required him to surrender in order to obtain his patent.[23] In this case, the Master found that Devex's assignor initially included an Example XXXV involving a borax rinse in his application.[24] Devex's assignor then "cancelled that example when the patent examiner required that the specification be shortened and limited to 'such parts of it as are commensurate with claims that the applicant will continue to prosecute.'"[25] The prob-

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[22] G.M. might argue that the concentration of borax in the rinse solution was usually lower than the concentration in the integral borax solutions. This rule, however, was not universal. Master's Hearing Transcript, pp. 117-125. G.M. might also argue, as the Master found, that Devex "offered no credible quantitative proof as to the amount of borax from the rinse likely retained in the coating after the lubricant bath." Master's Report, p. 45. Still, the above cited hearing testimony indicates that the borax rinse deposits were substantial. Thus, the Master "credit[ed] the testimony that at least some borax stayed on the workpiece." Master's Report, p. 45.

[23] Chisum, Patents §18.05 (1980).

[24] PX-3, p. 63.

[25] Master's Report, p. 48

lem with this argument is that it is unclear whether the examiner's objections were aimed at Example XXXV's borax rinse or at some other procedure. Indeed, the file wrapper is silent on this issue.[26] To the extent there is any evidence on this issue it indicates that the Patent Office believed that Devex's patent covered borax rinses. Thus, the Patent Office permitted Devex's patent to issue with at least one example, Example VIII, suggesting the use of a borax rinse.

Devex next attacks the Master's finding that accused practices 1 (after 1963), 8 and 46 in no way involved the use of borax and so were non-infringing. This finding, however, is based entirely upon the inferences to be drawn from the disputed evidence. The Master so meticulously reviewed and resolved this evidentiary dispute and it would be useless to repeat his discussion here.[27] Careful scrutiny of his findings, however, shows that they are not clearly erroneous; Devex failed to adduce enough evidence to give the Court a "definite and firm conviction" that the Master made a mistake. Accordingly, the Court affirms these findings.

Devex next attacks the Master's calculation of a reasonable royalty covering G.M.'s use of the Claim 4 process to make automobile bumpers. Devex claims that the Master erred in placing so much reliance upon Devex's 1964 industry-wide offer to license Claim 4 at 0.75% of the value of the products manufactured using Claim 4. Instead, Devex argues, the Master should have used the five percent of value figure suggested by its experts.

The ideal patent royalty assessment would be the rate at which a "willing buyer and a willing seller" would agree in an arms-length negotiation. *Horvath v. McCord Radiator &*

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[26] PX-3, p. 103

[27] Master's Report, pp. 53-59.

Manufacturing Co., 100 F.2d 326 (6th Cir. 1938). Devex argues that it is entitled to a high royalty rate on the basis of its contention that it was very expensive to substitute other processes for that of Claim 4.

The Master, however, reached an opposite conclusion, finding that several of G.M.'s divisions regularly substituted non-infringing processes for infringing ones and *visa versa*. Thus, Oldsmobile used non-infringing practices to make almost all of its bumpers. Similarly Chevrolet relied, though less successfully, upon non-infringing processes until November, 1958, and used non-infringing processes to manufacture part of its bumper needs from 1960 to 1963 and from 1965 to 1966. Cadillac used non-infringing processes prior to 1962 and after 1968. Fisher Body used non-infringing processes prior to 1957 and after 1960. Where G.M.'s various divisions so often produced marketable cars without using Devex's process, the Court finds, as the Master did also, that G.M.'s negotiators would not have agreed to the high figure Devex now proposes.

Devex argues, however, that the use of its process saved G.M. at least $1.53 per bumper, or a total of some $75 million at G.M.'s Chevrolet Division alone. Although a patentee should be allowed some freedom in choosing the standard of comparison by which the savings to be derived from the use of its process may be calculated, a patentee is not free to choose any standard of comparison. Rather, his standard must be acceptable.[28] There must be some basis for believing that the alternative process on which his standard is based was a realistic alternative, and not some process the only possible value of which is to make the patentee's process appear more useful than, in fact, it is. Where Devex's $1.53 figure derives

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[28] Gordon Form Lathe Co. v. Ford Motor Co., 133 F.2d 487, 495 (6th Cir. 1943).

from comparing the cost of forming a bumper using an outdated process[29] which appears to have been so expensive that as early as 1950 industrial publications recommended against using it and all of G.M.'s various divisions followed this advice, the Court finds that Devex's standard of comparison is unacceptable and that its $1.53 figure is irrelevant.

Another factor militating against the high royalty Devex now seeks is the fact that Devex did not own or operate its own manufacturing plant. Devex could reap the benefit of its patent only by convincing others to use it, offering them a patent license at an acceptably low rate. For these reasons, the Court rejects Devex's very high royalty demand.

Instead, the Court finds that a figure totalling 0.75% of sales is a reasonable royalty for G.M.'s infringement. Indeed, it is the very figure at which Devex voluntarily offered to license its patent in 1964. At that time, Devex was dealing from a position of strength because the Seventh Circuit had declared its patent valid and the Supreme Court had declined to review this decision. The 0.75% figure is not overly generous. *Compare Randolph Laboratories v. Specialties Development*, 213 F.2d 873 (3d Cir. 1954). Still, it is large enough to compensate Devex fully.

The Court recognizes that patentees must carry the burden of proving the level of royalties to which they are entitled. *W.L. Gore & Associates, Inc. v. Carlisle Corp.*, 198 U.S.P.Q. 353 (D.De. 1978). A patentee, however, need not prove its case to an unreasonable certainty. *Gordon Form Lathe Co. v. Ford Motor Co.*, 133 F.2d 487, 394 (6th Cir. 1943). Thus, where there is evidence that a patentee made a reasonable and *bona fide* licensing offer, it becomes defendant's duty to show the level by which, the offer exceeds a reasonable royal-

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[29] DX-A-9, Item 1, p. 251.

ty.[30] In this case, G.M. failed to adduce a shred of reliable evidence that Devex's offer was unfair.

The Master found that the 0.75% figure should be reduced by one third. This finding was based upon the idea that 0.75% was only a bargaining figure from which Devex's negotiations could be expected to retreat. Royalty calculations, however, must be based upon evidence — not mere speculation. *Trio Process Corporation v. L. Goldstein's Son, Inc.* 533 F.2d 126 (3d Cir. 1976). Without some evidence showing that Devex would have accepted a lower royalty figure and, if so, what that lower figure might be, this reduction is improper. The Court, therefore, accepts 0.75% of sales, or $8,607,183.70, as a reasonable royalty for G.M.'s use of the Claim 4 processes for forming bumpers.

Devex next attacks the Master's recommendation against awarding any damages for G.M.'s use of the Claim 4 process to make non-bumper parts. Devex claims that the use of its process permitted G.M. to make substantial savings of which, Devex claims, it is entitled to 56.5%. Devex again focuses on uneconomical techniques, including machining and hot forging.[31] Devex claims that its focus is justified by the fact that G.M., in determining when to authorize the investment for equipment necessary to use the infringing process, sometimes calculated its expected savings versus the cost of continuing to use its older machining or hot-forging equipment.

Devex's argument must be rejected. Hot-forging and machining techniques are too old and inefficient to be viewed as viable alternative methods to make the kinds of non-

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[30] The rationale for reversing the burden of proof here is the same as that which is articulated by Gordon Form Lathe Co. v. Ford Motor Co., 133 F.2d 487, 394-96 (6th Cir. 1943).

[31] Plaintiff's Brief, p.129.

bumper parts that G.M. used Devex's Claim 4 process for. Devex's proposed basis for comparison then is unacceptable. Devex failed both to suggest and to offer proof regarding any other means to calculate the reasonable royalties to which it is entitled. Because Devex thus failed to prove the level of damages to which it was entitled, the Master properly found that it should receive nothing. *W.L. Gore & Associates, Inc. v. Carlisle Corp.*, 198 U.S.P.Q. 353, 367 (1978).

Assuming, *arguendo* that Devex's standard of comparison is acceptable, Devex is not automatically entitled to the damages it would claim. Rather, G.M. must be afforded an opportunity to offer alternative standards for comparison. *Gordon Form Lathe Co. v. Ford Motor Co.*, 133 F.2d 487, 396 (6th Cir. 1943). In this case, the Master painstakingly reviewed the benefits of Devex's process versus those of other non-infringing pressure forming operations. He found that G.M.'s various divisions easily substituted non-infringing processes to manufacture non-bumper parts. Apparently, then, Devex's process was of "relatively slight importance to" G.M., and for this reason the Master properly found that G.M. should not be required to pay anything for its infringement in the manufacture of non-bumper parts.

Devex next complains that the Master improperly rejected its claim for multiple damages and attorneys' fees. As the Master found, however, G.M.'s defense of this case is not characterized by the inequitable dealings normally required for the award of multiple damages under 35 U.S.C. §284 or of attorneys' fees under 35 U.S.C. §285. Accordingly, the Court approves the Master's determination of these issues.

DEFENDANT'S OBJECTIONS TO THE MASTER'S FINDINGS

G.M. first argues that the Master improperly found that the Third Circuit Court of Appeals previously ruled that

processes using "Bonderlube 235" infringed Devex's patent. G.M.'s argument looks to the history of this litigation. Shortly after this litigation was transferred here, this Court ruled that of the three accused practices, including one that used "Bonderlube 246" and two that used "Bonderlube 235", none were infringing. This decision was reversed on appeal in an opinion in which the reviewing Third Circuit panel focused on showing the infringing nature of the "Bonderlube 246" process. Defendant now claims that the Third Circuit panel intended to leave standing this Court's judgment that "Bonderlube 235" processes did not infringe Devex's patent Claim 4. The Court finds no support for this claim and rejects it for the reasons set forth by the Master.[32]

G.M. next seeks to narrow the scope of infringing processes, arguing that TKKP and TSP are not borax equivalents, and that TKKP's use in accused practices 6, 14, 50 and 52 does not infringe Devex's patent Claim 4. G.M. first argues that TKKP and TSP are not borax equivalents. The Master properly found, however, that they were such good equivalents that G.M. regularly substituted the use of one for another. G.M.'s main argument is that TKKP and TSP do not meet the terms of Claim 4 because they are not "meltable at a temperature below the melting point of the ferrous metal phosphate" coating. In support of its argument, G.M. claims that while ferrous metal phosphate coatings melt below 1050°C, pure TKKP melts at 1109°C. and pure TSP melts at 1340°C. G.M.'s argument suffers two weaknesses. First, it is unclear that ferrous metal phosphate coatings do not melt at some higher temperature. Moreover, it is unclear that TKKP and TSP, as they are used in the involved practices, melt at the elevated temperatures that G.M. claims. TKKP and TSP are not pure, but are mixed with phosphate and soap. As the

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[32] Master's Report, pp. 9-16.

Master found, this causes TKKP and TSP to melt at lower temperatures, far below the temperatures at which the phosphate coating melts. This finding is well supported by experiments, including several in which objects coated with phosphate and TKKP and TSP were heated to a temperature well below 1050° C. Although the TKKP and TSP melted, the phosphate coating did not. Accordingly, the Court finds that the Master's findings on these issues are not clearly erroneous.

G.M. next argues that the Master's royalty assessment was overly generous, suggesting that values approaching a few hundred thousand dollars might be more reasonable. G.M's several proposed figures derive from a 1955 assignment, a 1956-57 licensing offer, a partial assignment in 1964 and some 1968 settlements. The problem with G.M.'s argument is that these various events are insufficiently relevant to determine what the major infringer of Devex's patent should pay to use a process which was known to be validly patented. Thus, the 1955 assignment and the 1956-57 licensing offer came before it was known that Devex's patent was valid; the partial assignment in 1964 likely involved many contingencies, including the time and money that would be required to tap the patent's true value and the 1968 settlements included marginal infringers against whom it might have been uneconomical to litigate the issues of their infringement fully. G.M. finally relies upon a 1970 estate tax valuation. This Court doubts that the circumstances controlling the negotiations between IRS agents and attorneys for an estate holding an approximately one-ninth interest in a patent are sufficiently similar to those which would control the negotiations between Devex and G.M. to merit much attention. Accordingly, the Court follows the Master's lead and rejects G.M.'s proposed valuations.

G.M. next attacks the Master's award of pre-judgment interest to Devex. G.M.'s argument lacks merit. The purpose of

this accounting is to determine the reasonable royalty for G.M.'s infringement. This royalty should approximate the actual royalty G.M. would have been paid had it been able to reach some accord with Devex. The Court calculated this royalty based on payments coinciding with G.M.'s use of Devex's patent. G.M.'s payments did not follow this schedule. Indeed, G.M. has yet to pay anything. Thus, it must now be charged a premium for the additional benefit it has enjoyed from retaining the use of the royalty money over the many years since its first infringement. To do otherwise would systematically undercompensate patentees and encourage their infringers to continue fighting lawsuits long after the disappearance of any justification for doing so for the sole purpose of gathering in generous interest money that rightfully belongs to someone else.

The Court, therefore, approves the payment of interest, and it further approves the computation of such interest at the corporate bond rate as recommended by the Master. The Master, however, calculated interest on the amount of his recommended award through October 31, 1979 only. The interest calculation, thus needs to be revised to account for this Court's changes and updated to the date when, after all appeals have run their course, G.M. pays for its infringement. The Court is hopeful that the parties, modeling the Master's calculations, will be able to agree without further assistance upon Devex's due. Should they be unable to do so, the Court will call upon the Master's able assistance.

COSTS

Remaining to be discussed is the division of costs, a topic which the Master did not treat. Rule 54 provides that "costs should be allowed as of course to the prevailing party." A prevailing party is the party which, although it might not sustain all of its claims, receives a favorable judgment.[33] Rule 54 further provides that a court may, in the exercise of sound discretion, vary this rule, but the situations in which this is done appear to be limited, involving unnecessary delay or only slight success on the part of the prevailing party, etc.[34] In this case, Devex has done no worse than fully litigate its claims achieving a large judgment in its favor. The Court, thus, sees no reason for relieving G.M., whose infringement necessitated this case, from the normal responsibilities of a wrongdoer.

G.M. asks, however, that at least a portion of the Master's fee be taxed to Devex. Costs of reference are treated as costs within the meaning of Rule 54.[35] Although courts are empowered to treat differently the payment of masters' fees and the payment of other costs,[36] the Court sees no reason for doing so here. Consequently, it will order G.M. to pay the Master's entire fee.

Any issues not addressed by this Opinion have nevertheless been considered by the Court and found to be without merit.

Submit Order.

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[33] 6 J.Moore, Federal Practice, ¶54.70[4] (2d Ed. 1980).

[34] 6 J. Moore, Federal Practice, ¶54.70[5] (2d Ed. 1980).

[35] Dyker Building Co. v. United States to use of Parreco, 182 F.2d 85 (D.C. Dir. 1950).

[36] 5A J. Moore, Federal Practice, ¶53.04[1] (2d Ed. 1980).

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

DEVEX CORPORATION, et al., *Plaintiffs,*	)	
v.	)	Civil Action No. 3058
GENERAL MOTORS CORPORATION, *Defendant.*	)	

FINAL JUDGMENT

This cause having been referred to a duly appointed Special Master, after the Court of Appeals for the Seventh Circuit held Claim 4 of Henricks patent No. Re. 24,017 ("Claim 4") valid (321 F2d 234 [1963]) and after the Court of Appeals for the Third Circuit held that defendant had infringed Claim 4 (467 F2d 257 [1972]), to determine which of defendant's non-adjudicated accused practices infringed Claim 4 and to set a reasonable royalty that defendant should pay for its infringement; and the Special Master, after due pretrial discovery and hearing, having filed his Report on February 7, 1980; and the parties having filed and briefed their respective objections to the Report; and the Court, after due consideration, having rendered its Opinion thereon on August 22, 1980,

NOW, THEREFORE, for the reasons set forth in the Court's aforesaid opinion,

It is hereby ORDERED, ADJUDGED, and DECREED that:

1. (a) The Special Master's determination, that it is the law of the case that each of the three prior trial practices ("Bonderlube 246", Pontiac bumper forming process, and "Bonderlube 235", valve lifter plunger forming process and rocket forming process), which were before the Court of Ap-

peals for the Third Circuit, were ruled by it to infringe Claim 4, is hereby adopted.

(b) The Special Master's findings, that the accused practices numbered 4, 5, 7, 9, 12, 13, 16, 17, 22, 25 (piston rings and piston studs), 26, 27, 28, 30, 31, 36, 37, 38, 42, 47, 48, 49, 51, 54, and 56 infringed Claim 4, are hereby adopted.

(c) The Special Master's findings, that tetrapotassium pyrophosphate (TKPP) and trisodium phosphate (TSP) were borax equivalents, hence accused practices numbered 6, 14, 50, 52, and 53 infringed Claim 4, are hereby adopted.

(d) The Special Master's findings, that accused practices in which borax or equivalent rinses were used did not infringe, are rejected; and it is hereby found that accused practices numbered 1 (before 1964), 18, 23, 24, 29, 32, 43, 55, 57 and 58 infringed Claim 4.

(e) The Special Master's findings that Claim 4 requires cleaning as an integral step of its process, and hence accused practices numbered 2, 3, 10, 11, 15, 19, 20, 21, 25 (piston rods), 33, 34, 35, 39, 40, 41, 44, 45 and Oldsmobile Sun Gears, all of said practices involving little or no cleaning, did not infringe Claim 4, are hereby adopted.

(f) The Special Master's findings, that accused practices numbered 1 (after 1963), 8, and 46 did not involve the use of borax or equivalents, and therefore that they did not infringe Claim 4, are hereby adopted.

2. (a) The Special Master's finding of the reasonable royalty payable by defendant on its infringing bumper manufacture is modified by increasing the amount from $5,731,455.80 to $8,813,945.50.

(b) The Special Master's findings that plaintiffs had failed to prove the level of damages to which they were entitled for defendant's infringement in the manufacture of non-bumper

parts, and that the infringing process was of "relatively slight importance" to defendant in such manufacture, are hereby adopted.

(c) The Special Master's finding and recommendation, that defendant be required to pay interest on the reasonable royalty from respective year-end dates of infringement to date of judgment at prevailing corporate bond rates, are hereby adopted and approved.

(d) The Special Master's finding and recommendation, rejecting plaintiffs' claim for multiple damages and attorney's fees, are hereby adopted and approved.

3. Plaintiffs are hereby allowed their costs, to be taxed against defendant; defendant shall pay the entire fee of the Special Master as part of said costs.

4. Any issues not addressed by this Court's opinion have nevertheless been considered by this Court and found to be without merit.

5. Defendant General Motors Corporation shall pay to Plaintiffs:

(i) $8,813,945.50 plus prejudgment interest in the amount of $10,912,291.05 (which represents interest through August 31, 1980) totalling $19,726,236.55; plus prejudgment interest of $3,071.22 for each day thereafter up to and including the date of entry of this judgment;

(ii) plus postjudgment interest "from the date of entry of this judgment at the rate allowed by State law" as provided by 28 USC 1961.

(iii) with costs.

/s/ Caleb M. Wright
United States District Judge

Dated: October 6, 1980.

UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

Nos. 80-2550 and 80-2551

DEVEX CORPORATION, TECHNOGRAPH, INC., WILLIAM C. McCOY, THEODORE A. Te GROTENHUIS, FREDERICK B. ZIESENHEIM, MARJORIE Te GROTENHUIS, WILLIAM C. McCOY, JR., and KATHERINE M. BASSETT

v.

GENERAL MOTORS CORPORATION

Devex Corporation, Technograph, Inc., William C. McCoy, Jr., individually and as Executor of the Estate of William C. McCoy, deceased, Theodore A. Te Grotenhuis, Frederick B. Ziesenheim, Marjorie Te Grotenhuis, and Katherine M. Bassett,
Appellants in No. 80-2550

General Motors Corporation,
Appellant in No. 80-2551

APPEAL FROM THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

D.C. Civil No. 3058

Argued September 18, 1981

Before: GIBBONS, HUNTER, *Circuit Judges*
and STERN,* *District Judge*

(Opinion filed December 15, 1981)

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*Honorable Herbert J. Stern, United States District Judge for the District of New Jersey, sitting by designation

OPINION OF THE COURT

HUNTER, *Circuit Judge*.

1. Plaintiffs charge defendant with massive patent infringement. The patent ("Claim 4," "Devex patent," "Henricks process") which is at the root of this litigation provides as follows:

> The process of working ferrous metal which comprises forming on the surface of the metal a phosphate coating and superimposing thereon a fixed film of a composition comprising a solid meltable organic binding material containing distributed there through a solid inorganic compound meltable at a temperature below the melting point of the ferrous metal phosphate of said coating and having a hardness not exceeding 5 on the Mohs' hardness scale, and thereafter deforming the metal.

This process is used in cold forming metal car parts by pressure.

> The happy result of [the Devex] process is that phosphate, soap and borax work to lubricate the pressure-forming operation, preventing harmful contact between the metal products and the machinery with which they are formed. . . . [The Devex process] is especially beneficial because it may be easily cleaned from the metal product following its formation.

Devex Corp. v. General Motors Corp., 494 F. Supp. 1369, 1372 (D. Del. 1980). The Devex patent expired in 1969; thus, only damages issues are before us.

2. This litigation, which began twenty-five years ago, is now in the accounting phase. Defendant and plaintiffs cross-appeal from the judgment of the district court, which was based in part on the report of a Special Master. For the reasons which follow, we will affirm.

I. Procedural History

3. The complaint in this case was filed November 13, 1956 in the Northern District of Illinois. After a trial, Judge Robson of that court held on February 1, 1962 (final judgment entered June 29, 1962) that the Devex patent was invalid. The United States Court of Appeals for the Seventh Circuit reversed, *Devex Corp. v. General Motors Corp.*, 321 F.2d 234 (7th Cir. 1963), *cert. denied*, 375 U.S. 971 (1964), and held that the patent was valid because "the elements which Henricks selected were put together in a new way and achieved a new and unexpected result." 321 F.2d at 236. The court further stated:

> There is substantial evidence in the record to prove that a new coaction between the soap, borax and phosphate occurred during the drawing process. Friedberg's tests showed that in the Henricks' process, new compounds are formed; the formation of insoluble organic compounds is inhibited, and the abrasive phosphate is transformed into a glassy amorphous compound having highly effective lubricating properties.

321 F.2d at 237. In other words, the use of a borax and soap combination in conjunction with phosphate resulted in improved lubrication of the metal during the deforming (cold forming by pressure) process and in improved cleanability of the product after its formation. The improved lubrication and cleanability combined to make the process patentable.

4. The court of appeals remanded the case for further proceedings. At that point, General Motors moved to have the case against it transferred to Delaware, and its

motion was granted. *Devex Corp. v. General Motors Corp.*, 146 U.S.P.Q. 346 (N.D. Ill. 1965).[1]

5. Judge Wright of the United States District Court for the District of Delaware ruled in 1967, in the suit between Devex and General Motors, that summary judgment in favor of plaintiffs on the issue of infringement was inappropriate. *Devex Corp. v. General Motors Corp.*, 263 F.Supp. 17 (D.Del. 1967). In 1968, he granted a motion by Devex for permission to amend its complaint to assert the doctrine of equivalents. *Devex Corp. v. General Motors Corp.*, 285 F. Supp. 109 (D.Del. 1968).[2]

6. After an infringement trial, Judge Wright ruled that the patent had not been infringed by General Motors. 316 F.Supp. 1376 (D.Del. 1970). That ruling was reversed by this court. *Devex Corp. v. General Motors Corp.*, 467 F.2d 257 (3d Cir. 1972), *cert. denied*, 411 U.S. 973 (1973). We rejected the district court conclusion "that infringement was not proved because Devex failed to establish that General Motors achieved the unexpected results that made the Henricks combination patentable." 467 F.2d at 260. After examining the materials before us, we concluded that the accused practices led to satisfactory lubricity and cleanability, which meant that those practices infringed. We specifically rejected General Motors' contention that, because the chemical reactions involved were arguably different from those taught by the Henricks patent, the General Motors practices did not infringe.

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1. After the transfer of the case against General Motors to Delaware, Judge Robson in Illinois granted summary judgment for plaintiffs on the infringement issues. Devex Corp. v. Houdaille Industries, Inc., 148 U.S.P.Q. 74 (N.D. Ill. 1965). The Court of Appeals reversed, 382 F.2d 17 (7th Cir. 1967), and the suit against Houdaille was thereafter settled.

2. Judge Wright resolved a discovery dispute at 275 F.Supp. 310 (D.Del. 1967).

> [I]f it is directly determinable that the two lubricants have essentially the same components, are applied in the same way and that the results of their use are essentially the same, the disputation of chemists about the chemical interactions that occurred in the processes cannot be decisive.
>
> Moreover, it may well be that chemical reactions differed in degree, and perhaps in kind as well, in different applications of the Henricks process. Claim 4, even as restricted and held valid in the Seventh Circuit, covers and protects the combination of soap and borax in proportions to be varied according to the nature and difficulty of the draw to be facilitated so that the process will yield its claimed advantages over a wide range of drawing pressures and temperatures. It is not claimed that in every Henricks mix under every temperature, chemical reaction and its products will be identical. Thus, if one accepts as persuasive the testimony of GM experts that reactions and substances produced during the GM drawings were not identical with those that the Henricks process is said to have produced using different proportions of ingredients under different pressures at different temperatures, it does not follow that GM practice failed to produce the results that made the Henricks process patentable.
>
> In these circumstances, the demonstrated effectiveness of GM practice in producing the satisfactory drawing and ease of cleaning that Henricks had achieved must prevail over any contrary inference drawn from disputed expert testimony as to comparative chemistry in what may well not have been equivalent situations.

467 F.2d at 261-62. Thus, because the results produced by the accused practices were identical to those produced by the Devex patent, the accused practices infringed. The differences between the specific chemical

processes of the Devex patent and those of the accused practices were not determinative, so long as the results were identical.

II. Issues Now on Appeal

A. *The Special Master's Report*

1. *Infringement Issues*

(a) *Borax-based lubricants*

7. Based upon our prior opinion, 467 F.2d at 261, the Special Master ruled that the accused practices which involved the use of borax-based lubricants (soap and borax) in cold forming bumpers and non-bumpers infringed the Devex patent, where the use of those lubricants led to cleanability in conjunction with lubricity, and where the advantages of both the cleanability and lubricity were used by General Motors. Thus, the Special Master concluded that accused bumper practices 4, 5, 12, 13, 36, 48, 49, 51, and non-bumper practices 7, 9, 16, 17, 22, 25 (in part), 26, 27, 28, 30, 31, 37, 38, 42, 47, 54 and 56 infringed the Devex patent. Special Master's Report at 27; Appendix at 287.

(b) *TKPP and TSP substituted for borax in lubricants*

8. The Special Master also ruled that General Motors' use of tetrapotassium pyrophosphate (TKPP) as a borax substitute in bumper making (accused practices 6, 14, 50, 52, and 53) and of trisodium phosphate (TSP) as a borax substitute in non-bumper making (accused practices 3, 11, 15 and 45) infringed the Devex patent. Special Master's Report at 29-38; Appendix at 289-298.

9. The Special Master found as a fact that "TKPP was put in [to the lubricant] as a borax substitute, to help the soap do the job of efficiently lubricating the

workpiece." Special Master's Report at 31; Appendix at 291. General Motors argued that the use of TKPP did not infringe the patent because pure TKPP melts at a higher temperature than the ferrous metal phosphate coating, which meant that TKPP did not fit the literal language of the patent. The Special Master rejected that argument, found as a fact that TKPP, when mixed in the coatings and as a matter of actual practice, melts before the ferrous metal phosphate coating, and concluded that the use of TKPP as a borax substitute to improve lubricity and cleanability therefore infringed the Devex patent. Special Master's Report at 32-37; Appendix at 292-297. The Special Master also found that TSP (accused practices 3, 11, 15, 45) has a lower melting point than the ferrous metal phosphate coating, and that if it were used as a borax substitute to obtain improved lubricity and cleanability it would infringe the Devex patent. Special Master's Report at 37-38; Appendix at 297-98.

(c) *Accused practices involving no actual cleaning*

10. The Special Master held that accused practices 2, 3, 10, 11, 15, 19, 20, 21, 25 (in part), 33, 34, 35, 39, 40, 41, 44 and 45 did not infringe the Devex patent. Some of those practices involved little or no actual cleaning of the part after its formation; some involved a cleaning process which, unlike the easy cleaning process used on borax-treated parts, would have removed the residue even if the Devex process had not been used. Because "ease of cleaning is an element vital to the life of the patent," the Special Master held that those practices which do not involve cleaning of the part cannot infringe the patent. Special Master's Report at 39-43; Appendix at 299-303.[3]

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3. None of the accused practices using TSP involved cleaning. Special Master's Report at 43; Appendix at 303.

(d) *Borax Rinses*

11. Accused Practices 1, 2, 8, 18, 20, 23, 24, 32, 34, 35, 39, 43, 55, 57 and 58 allegedly involved the use of a neutralizing rinse (as opposed to a lubricant) containing borax.[4] The Special Master concluded that the use of rinses containing borax did not infringe claim 4, for the following reasons:

i) There was no evidence that borax (or equivalent) rinses were used to lubricate the metal or to aid in cleaning. Special Master's Report at 46; Appendix at 306.

ii) The borax was used solely to neutralize acid carryover resulting from the phosphate bath. Numerous other techniques which did not involve borax were also used to achieve this result. Special Master's Report at 46-47; Appendix at 306-07.

iii) Example XXXV in the 1950 Henricks patent application set forth the use of a borax rinse to neutralize the acid. Example XXXV was cancelled by Henricks when the "patent examiner required that the specification be shortened and limited to 'such parts of it as are commensurate with claims that applicant will continue to prosecute.' " Moreover, Henricks testified that "neutralizing rinses were old and well known." Special Master's Report at 47-48; Appendix at 307-08.

iv) Henricks did not invent the use of borax as a neutralizing rinse. Special Master's Report at 48-49; Appendix at 308-09.

v) Defendant thought it was using borax rinses to neutralize acid, and not for lubrication or cleanability. Defendant used non-accused rinses as well as accused

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4. Accused Practice 29 involved using TSP as a neutralizing rinse. The analysis applicable to the borax-containing rinses applies to Accused Practice 29 as well, and also applies to any rinse practices which contained the infringing borax substitutes (TKPP and TSP).

rinses, and easily shifted back and forth. Special Master's Report at 49-50; Appendix at 309-10.

vi) Plaintiffs could have, but did not, contend that certain of the borax rinse processes infringed the patent prior to and at the infringement trial. Special Master's Report at 50; Appendix at 310.

vii) It would make no sense for defendant to seek the benefits that the borax-containing lubricant could provide in a rinse, rather than by the use of the borax-containing lubricant. Special Master's Report at 51; Appendix at 311.

(e) *Accused Practices 1, 8 and 46*

12. Plaintiffs argued that Accused Practices 1, 8 and 46 involved the use of borax, and that they infringed Claim 4 for that reason.

13. The Special Master discussed the factual question of whether Accused Practices 1, 8 and 46 contained borax at pages 53-59 of his report (Appendix at 313-319), and, after weighing the evidence adduced by each side, concluded that they did not.

2. *Damages Issues*

(a) *Multiple Damages and Attorney's Fees*

14. The Special Master ruled that an award of multiple damages and of counsel fees would be inappropriate in this case. "[T]wo highly respected jurists [Judges Robson and Wright] have reached the selfsame conclusions for which plaintiffs now accuse defendant of bad faith." Special Master's Report at 67-68; Appendix at 327-28. The Special Master also found explicitly that defendant had not been guilty of bad faith. Special Master's Report at 70; Appendix at 330.

(b) *Infringement in Bumper-Making: Facts*

15. Title 35 U.S.C. §284 provides in part:

> §284. Damages
>
> Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court.

The Special Master, noting that plaintiffs were not themselves the manufacturers, ruled that damages would take the form of a reasonable royalty, and that the royalty would be ascertained "by reference to hypothetical negotiations." Special Master's Report at 71; Appendix at 331.

16. The Special Master first examined the Devex patent as used in bumper making. The Oldsmobile division of General Motors, throughout the life of the Devex patent, cold formed bumpers without infringing the Devex patent. The Special Master thus found as a fact that "Oldsmobile was successful in cold forming bumpers without the use of the Henricks process during the entire life of the patent." Special Master's Report at 77; Appendix at 337. "To sum up, Oldsmobile's experience shows it was commercially practicable throughout the life of the Henricks patent to cold form bumpers without utilizing the Claim 4 process." Special Master's Report at 79; Appendix at 339.[5]

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5. During 1962 and 1963, Oldsmobile used Accused Practice 43 (a rinse). The conclusion that Oldsmobile at no time infringed the patent thus depends upon the ruling that the use of rinses did not infringe the patent. However, even if accused Practice 43 infringed the patent, Oldsmobile used non-infringing processes to make the vast majority of its bumpers (all except those made in 1962 and 1963), and the Special Master's factual conclusion that Oldsmobile successfully cold formed bumpers without the Devex process remains sound.

17. Bumpers at the Chevrolet division of General Motors were hot forged until 1954. In 1954, a new plant began cold forming bumpers for Chevrolet; the lubricant used was plain soap over phosphate. Bumper production was satisfactory without borax or an equivalent.

18. By 1957-58, Chevrolet was experiencing plating problems,[6] and in November 1958, Chevrolet switched to a lubricant which contained borax and infringed the Devex patent. From November 1958 to mid-January 1965, Chevrolet used infringing processes (containing borax) to manufacture 93% of its bumpers. Chevrolet used non-infringing processes to a limited extent (7%) during that period. From 1965 until the patent expired, Chevrolet used infringing processes (containing TKPP) to cold-form approximately 84% of its bumpers. In sum, the Special Master found that Chevrolet used the Devex process because Chevrolet thought the Devex process was *better*, but rejected plaintiffs' contention that the Devex process was *essential*. In reaching this conclusion, the Special Master carefully weighed conflicting testimony. Special Master's Report at 79-91; Appendix at 339-351.

19. The Pontiac division of General Motors used a plastic coating (non-infringing) process in making its bumpers from 1952-1955. From late 1955 through the 1968 model year, Pontiac used infringing processes to make its bumpers, with the exception of the 1956 model year, during which Pontiac used the plastic spray for some of its bumpers. In August 1968, Pontiac switched to a non-accused process. Special Master's Report at 91-96; Appendix at 351-356.

20. The Special Master found that the Henricks process in use at Pontiac was superior to non-infringing practices, but that the Henricks process was "not

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6. Bumpers must be cleaned prior to plating; if the cleaning is inadequate, the plating will be likewise.

indispensable." Special Master's Report at 97 & n., Appendix at 357 & n.. After weighing conflicting evidence, the Special Master concluded that "Henricks' lubricants came to be regarded by Pontiac as more satisfactory, but others would have done the job." Special Master's Report at 98; Appendix at 358.

21. The Cadillac division of General Motors cold formed its bumpers from 1952 through the 1962 model year without infringing the Devex patent. Cadillac switched to the Devex process in the 1962 model year, and used it until July 1968 for 100% of its bumpers. In 1968, Cadillac switched to a non-infringing practice. Again, the Special Master found that the Henricks process resulted in benefits to General Motors, but that it was not essential. Special Master's Report at 100-01; Appendix at 360-61.

22. At Fisher Body-Elyria Bumper Parts, General Motors infringed the patent from April 1957 through March 1960. Non-accused or non-infringing practices were used at all other times relevant to this suit. Special Master's Report at 101-02; Appendix at 361-62.

23. The Special Master's factual finding as to infringement in bumper making, in sum, is that the three major infringing divisions (Pontiac, Chevrolet and Cadillac) used the Henricks process because it was better than non-infringing alternatives, but not because it was essential or because there were no commercially viable non-infringing alternatives available. Indeed, Oldsmobile's experience proves the availability of practicable alternatives. There were periods when one or more of the infringing divisions used nonaccused or no.. infringing practices. This leads inexorably to the factual conclusion that non-infringing cold forming alternatives to the Devex process existed: if there had been no choice, defendant would have infringed the patent 100% of the time.

(c) *The Reasonable Royalty: Bumpers*

24. Plaintiffs sought as a royalty for bumper infringement a percentage of the sale price of the bumpers. The percentage plaintiffs sought depended upon their factual contention that the Devex process was essential to defendant's cold forming of bumpers. The Special Master rejected plaintiffs' premise when he found as a fact that non-infringing, commercially practicable cold forming processes existed. He also rejected the royalty rates proposed by General Motors, which were based in the alternative on the cost of the lubricants, the sale price of the patent, the value given the patent for estate tax purposes, settlements reached by plaintiffs with other infringers, and the royalty rate which the owners of the patent charged a company owned by the same persons who owned the patent at the time.

25. The Special Master decided to base the reasonable royalty on an offer made by plaintiffs in 1964 to license the patent for three quarters of one percent (.75%) of the sale price of the bumpers. The Special Master postulated hypothetical negotiations, stressed the availability of viable alternatives to the Devex patent, added that Oldsmobile produced bumpers without the Devex process but that Chevrolet, Pontiac and Cadillac were loyal to the Devex process, noted that the Devex process did have a considerable value, and ultimately reduced the .75% figure — which he decided would have been plaintiffs' opening offer — by approximately one-third.

(d) *Infringement in Non-Bumper making: Facts and Reasonable Royalty*

26. Plaintiffs argued before the Special Master that defendant's choice was between "cold forming non-bumper parts through Henricks, or not cold forming at all." Special Master's Report at 103; Appendix at 363. The Special Master rejected this contention, and

> [found] the fact to be that non-bumper parts could be and very often were, cold formed by defendant without the use of Henricks. Indeed the question does not even seem to me to be a close one. The evidence is that, far from dominating the field, the Henricks process had relatively slight importance to defendant in the production of non-bumper extruded parts.

Special Master's Report at 104; Appendix at 364.

27. The Special Master then examined the impact of this conclusion on plaintiffs' damages claims for non-bumper infringement. Plaintiffs sought a percentage of the difference between the cost of producing non-bumper parts by machining or hot forging and by using the Devex process. The Special Master noted that a reasonable royalty cannot be based on speculation, although "a fair approximation based on the evidence will suffice." Special Master's Report at 111; Appendix at 371. He continued:

> By relying in their savings-and-gains proof solely on the (erroneous, as I have found) premise that defendant could have cold formed non-bumper parts only through Henricks, plaintiffs have offered no evidence on which a royalty might be reasonably based.

Special Master's Report at 111-12; Appendix at 371-72. Although there had been sufficient evidence with regard to bumpers to supply a fall-back position (the .75% offer), there was no such alternative presented with regard to non-bumper parts, and plaintiffs were therefore not entitled to royalties on the non-bumper infringement of the patent.

(e) *Interest*

28. The Special Master awarded interest "as a matter of fact," after finding that the hypothetical bargainers would arrange for interest as part of the reasonable royalty. Special Master's Report at 140-41; Appendix at 400-01. He also ruled that plaintiffs were entitled to prejudgment interest (delay damages) at the prevailing corporate bond rate as a matter of law, and that that interest should be calculated each year based on the number of infringing parts made in that year.

B. *The District Court Opinion*

29. The district court, turning first to plaintiffs' claims of error, affirmed the ruling of the Special Master that "[p]ractices as to which little or no cleaning was required do not infringe." 494 F.Supp. at 1375. The trial court interpreted prior decisions in the Devex litigation as "holding that Claim 4 requires cleaning as an integral step of its process." *Id.* at 1373. The court stated:

> The primary importance of Devex's process was not that the addition of borax somehow enhanced lubricity. Rather, the addition of borax inhibited the formation of zinc stearate resulting in products that could be easily cleaned. [In the validity phase of this litigation], Devex . . . relied upon the ease of cleaning to defend the validity of what would otherwise have been an overly broad claim.

494 F.Supp. at 1374-75.

30. The trial court then turned to the issue of whether borax rinses infringed the Devex process. He ruled that the borax rinses did infringe the patent, but only where the parts formed after the rinse was applied were cleaned. In other words, if the rinse performed the same role as the lubricant, it infringed the patent.

31. The trial court affirmed the Special Master's fact finding that accused practices 1, 8 and 46 did not infringe, noting that the "clearly erroneous" standard of

review applied under Fed. R. Civ. P. 53(e)(2), and that the Special Master had "meticulously reviewed and resolved this evidentiary dispute . . . ." 494 F.Supp. at 1376.

32. The trial court then turned to the reasonable royalty rate. The court agreed with the Special Master's findings that

> . . . Oldsmobile used non-infringing practices to make almost all of the bumpers. Similarly Chevrolet relied, though less successfully, upon non-infringing processes until November, 1958, and used non-infringing processes to manufacture part of its bumper needs from 1960 to 1963 and from 1965 to 1966. Cadillac used non-infringing processes prior to 1962 and after 1968. Fisher Body used non-infringing processes prior to 1957 and after 1960. Where G.M.'s various divisions so often produced marketable cars without using Devex's process, the Court finds, as the Master did also, that G.M.'s negotiators would not have agreed to the high figure Devex now proposes.

494 F.Supp. at 1376-77. The court disagreed, however, with the reduction in the .75% licensing offer, and ruled that in the absence of evidence tending to show that Devex would accept a figure less than .75%, the reduction was improper because speculative. Thus, the court accepted .75% of the sale price as the royalty for bumper infringement.[7]

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7. The trial court awarded plaintiffs $8,813,945.50 in royalties; $10,912,291.05 in prejudgment interest for the period through August 31, 1980; $3,071.22 in prejudgment interest for each day from (and including) September 1, 1980 *through* October 6, 1980 (the day the final judgment was entered); post-judgment interest at the rate allowed by state law from October 7, 1980 until payment of the award to plaintiffs by defendant; and costs. Final judgment at 3-4; Appendix at 467-68.

33. The court affirmed the Special Master's refusal to award royalties for non-bumper infringement:

> In this case, the Master painstakingly reviewed the benefits of Devex's process versus those of other non-infringing pressure forming operations. He found that G.M.'s various divisions easily substituted non-infringing processes to manufacture non-bumper parts. Apparently, then, Devex's process was of "relatively slight importance to" G.M., and for this reason the Master properly found that G.M. should not be required to pay anything for its infringement in the manufacture of non-bumper parts.

494 F.Supp. at 1378.[8]

34. The trial court then turned to General Motors' claims of error. The court rejected General Motors' contention that this court, in discussing Bonderlube 235 in its prior opinion, intended only to reverse the judgment of non-infringement as to Bonderlube 235 and to leave the rest of the trial court judgment, which dealt with other compounds, intact. The trial court also rejected General Motors' contentions that TKPP and TSP did not infringe, that the royalty rate should have been based on other factors, that the Special Master should not have assessed prejudgment interest, and that General Motors should not be liable for costs (including the Special Master's fee).

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8. The trial court also rejected plaintiffs' claim for multiple damages and attorney fees.

C. *Issues now on appeal to this court*

35. Plaintiffs make the following arguments on appeal to this court:

i. The award of a royalty of .75% of bumper sales was unconscionably low. The Special Master and the trial court erred in finding that there were reasonable alternatives to the Devex process available to defendant. Not only were the fact findings of the lower courts clearly erroneous, but also the court and the Special Master erred as a matter of law in disregarding (or refusing to rely upon) plaintiffs' evidence of savings attained through use of the Devex process. The lower court further erred as a matter of law in not relying upon plaintiffs' evidence of savings, because defendant did not refute plaintiffs' showing that there were no alternatives available to General Motors at the time the infringement began which would have yielded results equally beneficial to the results given by the Devex process.

ii. The finding that accused practices 8 and 46 did not contain borax or TKPP was clearly erroneous. Moreover, that defendant admitted that accused practice 46 infringed the patent.

iii. The Special Master and the trial court erred as a matter of fact and of law in refusing to award royalties for non-bumper infringement. The finding that there were alternatives available to General Motors which would give equally beneficial results was clearly erroneous. Moreover, the patent laws require the award of a reasonable royalty where infringement has taken place; thus, to refuse to award damages in a case such as this one, where massive infringement occurred, is erroneous. Finally, General Motors failed to rebut plaintiffs' showing as to what the savings resulting from infringement were, and failed to show that there were in fact alternatives available to General Motors at the time infringement began which would yield equally beneficial results to the Devex process.

iv. The Special Master and the trial court erred in construing the prior opinions written in this case as requiring that a part formed by the Devex process actually be cleaned in order for infringement to have occurred. Attaining the result of cleanability is enough to warrant a finding of infringement, even though the part is not actually cleaned.

36. Defendant raises the following contentions on this appeal:

i. It is erroneous for a court to award prejudgment interest on a reasonable royalty award where the amount of the award was unliquidated until judgment was entered, and in the absence of special circumstances.

ii. The law of the case has restricted the Devex patent to those processes which involve the use of borax. Thus, plaintiffs cannot now argue that the use of TKPP and TSP infringes the patent, both because of the law of the case and because plaintiffs earlier waived the right to assert the doctrine of equivalents.

iii. The Special Master was correct in ruling that the use of rinses which contain borax or its equivalents does not infringe the patent, because the law of the case requires that the use of the Devex patent be for the purposes of attaining lubricity and cleanability, and the use of the rinses has a different purpose entirely. Thus, the district court erred in ruling that the use of the rinses infringes the Devex patent.

iv. The choice by the Special Master of the .75% royalty rate, and his subsequent reduction of that figure by one-third, was erroneous because the correct figure was one of the alternatives suggested by defendant. The increase by the trial court of the rate to the .75% figure compounded the error.

III. Discussion

A. *The Standard of Review*

37. In patent infringement cases, "[t]he awarding of damages involves a subtle judicial function; the statute allows considerable latitude [to the fact-finding court]." *John Zink Co. v. National Airoil Burner Co.*, 613 F.2d 547, 559 (5th Cir. 1980). *See also Milgo Electronic Corp. v. United Business Communications, Inc.*, 623 F.2d 645, 663 (10th Cir.), *cert. denied*, 101 S. Ct. 794 (1980) ("An appellate court must affirm the award if there is substantial record evidence to support it: the trial court's findings will not be set aside unless it is shown that they are clearly erroneous.")

38. The scope of a patent, which is determined by construing the patent, is a question of law. *Studiengesellschaft Kohle mbH v. Eastman Kodak Co.*, 616 F.2d 1315, 1324 (5th Cir.), *cert. denied*, 101 S. Ct. 573 (1980). However, "[t]he issue of patent infringement is a question of fact . . . ." *Id.* at 1322. Moreover, "patent cases, because they so frequently contain conflicts in expert testimony, seem particularly suited for Rule 52(a)'s review limitations [the clearly erroneous standard]." *Id.* at 1323.

39. The Special Master heard testimony during fifty-three days of trial. He wrote an exhaustive and thoughtful report, in which he set forth findings of fact based on a careful weighing of conflicting testimony as well as of documentary evidence. The trial judge, after a detailed analysis of the facts found by the Special Master, and after applying the standard of review set forth in Fed. R. Civ. P. 53(e)(2) (the "clearly erroneous" standard) to those fact findings, decided that none of the Special Master's findings of fact was clearly erroneous. We agree.

40. Whether the Special Master and the trial court ascertained and applied the law correctly to the facts is

subject to a less stringent standard of review than the "clearly erroneous" standard. We have concluded, however, that the Special Master and the trial court ascertained and applied the law correctly. The two differ in only two respects: first, the Special Master ruled that none of the accused rinse practices infringed the patent, while the trial court ruled that those accused rinse practices which involve no cleaning do not infringe, but that those which involve cleaning do infringe. Second, the Special Master reduced the .75% industry-wide offer figure by one-third, while the trial court reinstated the .75% figure. We agree with the results reached by the Special Master and the district court; where the two differ, we affirm the district court.

41. The scope of the Devex patent is largely a question of law. Thus, questions such as whether cleanability (as opposed to actual cleaning) is sufficient to bring a process within the patent are questions of law. The question of which of the accused processes infringed the patent is one of fact. Which processes involved actual cleaning, which processes involved the use of borax equivalents, and the like, are factual issues.

42. When it comes to review of the damages issues, such as whether plaintiffs proposed a reasonable standard of comparison upon which the court could have based a royalty award, identifying a question as one either of fact or of law becomes more problematic. At this point in this case, however, the reasonableness of a proposed standard of comparison is largely factual, because the answer depends upon factual issues, such as whether noninfringing alternatives were available to defendant. If such alternatives were available, it would weigh heavily against plaintiffs' proposed standard of comparison if that comparison depended upon the nonavailability of viable alternatives.

B. *Infringement Issues*

1. *Borax-based lubricants*

43. It is clear from prior opinions in this litigation and we reaffirm that the use of borax-based lubricants in cold forming bumpers and non-bumpers infringed the Devex patent where those lubricants contributed to cleanability and lubricity, *and* where General Motors took advantage of the lubricity and particularly of the cleanability in the actual manufacturing process. Ascertaining which of the accused practices fits this category then becomes a matter of fact. No effective challenge to the inclusion of accused practices in this category has been made.[9]

2. *TKPP and TSP Substituted for Borax in Lubricants: The Doctrine of Equivalents*

44. Plaintiffs have asserted the doctrine of equivalents with regard to defendant's use of TKPP and TSP as borax substitutes. In *Graver Tank & Mfg. Co. v. Linde Air Products Co.*, 339 U.S. 605 (1950), the Supreme Court discussed the doctrine of equivalents:

> The theory on which [the doctrine] is founded is that "if two devices do the same work in substantially the same way, and accomplish substantially the same result, they are the same, even though they differ in name, form, or shape." [Citation omitted.] The doctrine operates not only in favor of the patentee of a pioneer or primary invention, but also for the patentee of a secondary invention consisting of a

9. We reject as wholly without merit defendant's argument that this court, in its prior opinion in this case, intended to differentiate between processes using Bonderlube 246 and those using Bonderlube 235.

> combination of old ingredients which produce new and useful results . . .

Id. at 608. The Court also established the standard of review applicable to the doctrine:

> A finding of equivalence is a determination of fact . . . . Like any other issue of fact, final determination requires a balancing of credibility, persuasiveness and weight of evidence. It is to be decided by the trial court and that court's decision, under general principles of appellate review, should not be disturbed unless clearly erroneous. Particularly is this so in a field where so much depends upon familiarity with specific scientific problems and principles not usually contained in the general storehouse of knowledge and experience.

Id. at 609-610.

45. "The 'doctrine of equivalents' which governs determinations of infringement requires an assessment of function rather than form in measuring the claims of a patent." *N.V. Maatschappij Voor Industriele Waarden v. A.O. Smith Corp.*, 590 F.2d 415, 421 (2nd Cir. 1978).

> A patented process is infringed only by unauthorized performance of substantially the same process steps in substantially the same way to accomplish substantially the same result. It is not necessary that the accused process be practiced with the same or substantially the same apparatus as disclosed by the patentee. [Citation omitted.] Nor is it necessary that the materials used in the process be identical to those disclosed and claimed as long as they are equivalent.

International Glass Co. v. United States, 408 F.2d 395, 400 (Ct. Cl. 1969). In *International Glass*, the accused practices did not infringe because

> they do not appropriate the gist of the claimed process; are not a mere variation of the details of the

claimed process; and in fact do not substantially follow the mode taught by the patent.

Id. at 401.

46. "To establish equivalency for the purpose of showing infringement of a patent claim, the patentee has the burden of proving a real identity of means, operation, and result." *Ziegler v. Phillips Petroleum Co.*, 483 F.2d 858, 868 (5th Cir.), *cert. denied*, 414 U.S. 1079 (1973).

> [P]rinciples [of the doctrine of equivalents] are applied to compositions of matter where there is equivalence between chemical ingredients. [Citations omitted.] In [*Graver Tank & Mfg. Co. v. Linde Air Products Co.*, 339 U.S. 605 (1950)] the Supreme Court spoke to the problem of determining what constitutes equivalency.
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> > "Consideration must be given to the purpose for which an ingredient is used in a patent, the qualities it has when combined with the other ingredients, and the function which it is intended to perform."
> > *Graver, supra*, 339 U.S. at 609 . . . .

Id. at 869.

> In recognition of the fact that a patent would be virtually worthless if it did not protect against devices which incorporate only unimportant variations of the patented device, the doctrine of equivalents provides that a later-developed device will be regarded as the equivalent of the patented device if, although different in form or shape, it "performs substantially the same function in substantially the same way to obtain the same result." [Citation omitted.] In its early development, the doctrine generally was applied in cases involving the equivalence of devices having mechanical components. Today,

> however, the same principles are applied to compositions where there is equivalence between chemical ingredients. [Citation omitted.]

Chemical Cleaning, Inc. v. Dow Chemical Co., 379 F.2d 294, 296 (5th Cir.), *cert. denied*, 389 U.S. 1040 (1967). *See also Rich Products Corp. v. Mitchell Foods, Inc.*, 357 F.2d 176, 177, 182 (2d Cir.), *cert. denied*, 385 U.S. 821 (1966) (defendant infringed patent, where defendant substituted hydroxypropyl methyl, a cellulose, for the alkyl groups specified in the patent, the cellulose was one of the four essential ingredients in the patent, and the substitute chemical performed the same function as the chemical listed in the patent).

47. Here, the Special Master, in the role of fact finder, found, after weighing the evidence, that TKPP and TSP, when substituted for borax, produce the same results (cleanability and lubricity) that borax produces and fit the literal language of the patent in terms of melting point. Cleanability and lubricity are the results which made the Devex process patentable in the first place; thus, TKPP and TSP, which produce those results and which read on the literal language of the patent, infringe the patent. Certainly the fact findings here, that TKPP and TSP are equivalents of borax and infringe the patent, are not clearly erroneous.[10]

48. General Motors contends here that plaintiffs cannot claim the use of TKPP and TSP as infringements because plaintiffs insisted earlier in this litigation that

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10. Defendant argues that the coaction of TKPP (or TSP) with soap did not produce the same chemical by-products as borax in reacting with soap. That is irrelevant: TKPP and TSP produced the critical results of cleanability and lubricity when substituted for borax. In addition, TKPP and TSP fit the literal language of the patent. This case is thus distinguishable from Sealed Air Corp. v. U.S. International Trade Commission, 645 F.2d 976 (C.C.P.A. 1981), in which the accused process did not read on the literal language of the patent.

borax infringed, and are therefore estopped from asserting that anything other than borax infringed.

49. We disagree. We reject General Motors' contention that earlier opinions in this litigation which referred to the use of borax meant the exclusive use of borax and no other inorganic compound, and, for the reasons discussed herein, we affirm the rulings that the use of TKPP and TSP infringed the patent.[11]

3. *Accused Practices Involving No Actual Cleaning*

50. The validity of the Devex patent depended upon the new results of commercially practicable cleanability and enhanced lubricity. However, the precise question of whether cleanability or cleaning infringes the patent was not reached in either the validity or infringement phases. Where cleanability is irrelevant to the creation of the part involved, one of the factors which saved the Devex patent from invalidity is not present, and the patent has not been infringed. In other words, we hold that while one result which saved the patent is cleanability, a practice does not infringe unless it involves actual cleaning.

4. *Borax Rinses*

51. The Special Master ruled that borax rinses did not infringe the Devex patent, in part because they were

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11. It is arguable that General Motors has waived its right to make this argument. General Motors' contention that plaintiffs are estopped from alleging that anything other than borax infringes is essentially an argument that plaintiffs cannot assert the doctrine of equivalents. The trial court granted plaintiffs' motion to amend its complaint to assert the doctrine of equivalents *before* the first appeal to this court was taken. 295 F.Supp. 109 (D.Del. 1968). Defendant did not, apparently, raise the propriety of the trial court's action on that appeal, even though many, if not all the arguments which defendant makes now could have been raised in the context of the first appeal.

rinses used to neutralize acid, and were not designed to improve lubricity or cleanability. The trial court agreed that borax rinses did not infringe where they were used solely to neutralize acid, but disagreed with the Special Master's reasoning insofar as it excluded from infringement those rinse practices which were, in fact, used to promote cleaning.

52. We agree with the trial court. That the soap and borax (or equivalent) may be applied to metal in a series of steps, rather than in a combined form, or as a rinse rather than a lubricant, is not determinative of whether a particular practice infringes or not. What *is* determinative is the result produced and the use to which that result is actually put. Where soap and borax are applied to the metal seriatim, instead of in a combined form, the process infringes the Devex patent where cleanability and its effects are put to use in the actual process.[12]

5. *Accused Practice 46*

53. As did the trial court, we conclude that the fact findings made by the Special Master were not clearly erroneous, and affirm the Special Master and the trial court with regard to Accused Practice 46, which did not infringe the patent.

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12. The decisions of the Special Master and of the trial court are not really inconsistent with each other or with prior rulings in this litigation. In connection with the accused practices which involved little or no cleaning, both agreed that only those practices which involve commercially practicable cleaning could infringe the patent. The Special Master and the trial court agreed that where rinse practices were used solely to neutralize acid, those practices did not infringe the patent. The Special Master and the trial court disagreed only as to those rinse practices which involved actual cleaning. The trial court carried out the logic discussed in Part III (B)(4) *supra* in its ruling; the Special Master applied a strict reading of the patent in reaching his result.

C. *Damages Issues*

54. We now turn to the question of what damages plaintiffs should receive from defendant.

1. *Bumpers*

55. The Special Master concluded, based upon facts found by him, that the Devex process was useful in but not essential to the cold forming of bumpers. We agree that the facts lead to that conclusion.

56. Oldsmobile only infringed the Devex patent in bumper making in 1962-1963, and produced almost all of its bumpers without infringing the Devex process. From 1958-1965, Chevrolet infringed the Devex patent in producing 93% of its bumpers; from 1965-1969, Chevrolet infringed in producing 84% of its bumpers. Pontiac infringed from 1955-1968; Cadillac did not begin infringing until 1962; and Fisher Body-Elyria only infringed between 1957 and 1960. This means, of course, that General Motors did *not* infringe at all other times. If plaintiffs' argument that General Motors could not have efficiently cold formed bumpers without the Devex process were correct, then General Motors would have been compelled to use infringing processes in producing 100% of its bumpers. General Motors did not do so, and we reject plaintiffs' argument.

57. The goal of assessing royalties in patent infringement cases is to place the plaintiff in the same position it would have been in if the patent had not been infringed. The burden is on the party seeking damages to show the amount of those damages. *See Reliance Molded Plastics, Inc. v. Jiffy Products*, 215 F.Supp. 402, 412 (D.N.J. 1963), *aff'd per curiam*, 337 F.2d 857 (3d Cir. 1964). Where a plaintiff itself uses the patented process in manufacturing, damages for infringement may take the form of lost profits, and the burden is on the plaintiff to show their amount. *See Panduit Corp. v. Stahlin Brothers Fibre Works, Inc.*, 575 F.2d 1152,

1157, 1158 (6th Cir. 1978); *Zegers v. Zegers, Inc.*, 458 F.2d 726, 729 (7th Cir.), *cert. denied*, 409 U.S. 878 (1972); *Universal Athletic Sales Co. v. American Gym*, 480 F.Supp. 408, 413 (W.D. Pa. 1979). Where, as here, the party alleging infringement does not itself manufacture or use the patented process, compensation may take the form of a reasonable royalty for licensing the use of the patent. As with the manufacturing plaintiff, it is arguable that the licensing plaintiff has the burden of proposing a reasonable royalty. *See Wayne-Gossard Corp. v. Moretz Hosiery Mills, Inc.*, 447 F.Supp. 12, 15 (W.D.N.C. 1976), *aff'd per curiam*, 573 F.2d 191 (4th Cir. 1978). A rule that a nonmanufacturing plaintiff has no obligation to proffer a reasonable basis for calculating a royalty would be unfair to manufacturing plaintiffs and to the courts: the manufacturing plaintiff would have the "heavy burden," *Panduit Corp.*, 575 F.2d at 1158, of proving lost profits, while the non-manufacturing plaintiff would have no obligation to come forward with any evidence at all.

58. Even if there is no explicit burden on a plaintiff to adduce the basis for a reasonable royalty, it is self-evident that there must be enough evidence in the record to allow the fact finder to ascertain a reasonable royalty. In the absence of any evidence as to what would constitute a reasonable royalty in a given case, a fact finder would have no means of arriving at a reasonable royalty, and none could be awarded.

59. Plaintiffs argue here that they are entitled to a percentage of the savings which accrued to General Motors by reason of General Motors' infringement of the patent, and that the standard to which the infringing bumpers should be compared (the "standard of comparison") is the cost of producing bumpers by hot forging or by contour polishing after forming. Plaintiffs also contend that the burden shifted to General Motors to show that plaintiffs' proposed standard should not be used.

60. The Special Master and the trial court agreed that plaintiffs' proposed standard of comparison was not reasonable, because that standard of comparison required accepting the factual premise that General Motors could not efficiently cold form bumpers without the Devex process, a factual premise which the Special Master found to be false. Instead of ruling that plaintiffs had not adduced a reasonable standard of comparison and refusing to award damages on the ground that to do so would involve too much speculation, however, the Special Master awarded damages based upon an industry-wide licensing offer made by plaintiffs in 1964. The district court reversed the Special Master's action in reducing the .75% figure by one-third, but agreed with the Special Master's action in basing the award of royalties on the licensing offer. We agree with that approach, and affirm the award of damages of .75% of the sales price of infringing bumpers.

61. In *Pitcairn v. United States*, 547 F.2d 1106 (Ct. Cl. 1976), *cert. denied*, 434 U.S. 1051 (1978), the court awarded the owner of the patent a royalty based on an industry-wide offer to license made by the owner.[13] In *Pitcairn*, the patent owner had agreed with one licensee to a 2% royalty, and had offered to license anyone else at the 2% rate. The court rejected the owner's contentions that the 2% royalty agreement could not be taken into account because it "was mainly the product of compromise to avoid litigation" and that an offer by a patentee is inadmissible to prove value. *Id.* at 1116-17.

62. The court further gave the offer and the actual rate "a *prima facie* title to acceptance as the reasonable

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13. *Pitcairn* involved 28 U.S.C. §1498, which is applied where the infringer is the United States. We agree with the Special Master that the fact that an award is made under §1498 instead of §284 does not preclude the application of the §1498 interest reasoning to a §284 case. The goals of §1498 and §284 are the same: to compensate fully the patent owner for the loss incurred by reason of the infringement.

royalty . . . ." *Id.* at 1118. The court rejected the infringer's contentions that the royalty should be less than 2%:

> For the present case, in which there was only one actual licensee during almost the entire span of the infringement years, and this suit began early in the recovery period, the best that we can do is to accept the only royalty rate "offered freely [by the owner] to everyone" in the industry during that period, a rate actually agreed to, for a time, by . . . the largest manufacturer.

Id. at 1119.

63. While there are factors which distinguish this case from *Pitcairn*, nonetheless *Pitcairn* supports reliance upon the .75% figure here. That plaintiffs here made their offer in the face of industry-wide infringement[14] is somewhat counterbalanced by the fact that plaintiffs, at the time of the offer, had just won a major validity victory in the Seventh Circuit. The .75% offer doubtless included an element of a desire to end this already extensive litigation; that factor, although to be taken into account, does not automatically rule out use of the .75% figure.

64. *In Trio Process Corp. v. L. Goldstein's Sons, Inc.*, 612 F.2d 1353 (3d Cir.), *cert. denied*, 449 U.S. 827 (1980), the court stated that "the actual license rate is an important factor in the determination of a reasonable royalty, at least when those royalties prove or *tend* to prove an established royalty." *Id.* at 1358. The result reached here — that an actual license offer may, if the facts permit, be a factor in assessing a reasonable royalty — logically follows from *Trio Process*.

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14. *See* Panduit Corp. v. Stahlin Brothers Fibre Works, Inc., 575 F.2d 1152, 1158 (6th Cir. 1978) (setting of reasonable royalty after infringement is not the equivalent of negotiations between "truly 'willing' " patent owners and licensees).

65. In short, plaintiffs' proposed royalty rate was based on an incorrect factual premise. There was, however, evidence in the record justifying the Special Master's basic reliance on the .75% figure. Accordingly, we rule that the .75% rate assessed by the district court was appropriate here.[15]

2. *Non-bumpers*

66. The Special Master and the trial court refused to award plaintiffs damages for infringement in non-bumper cold forming because plaintiffs failed to adduce a reasonable standard of comparison upon which to premise such an award and because the Devex patent was relatively unimportant in non-bumper making. Plaintiffs' proposed standard of comparison suffered from the same infirmities as the proposed standard for bumper making: it was based on a factual assertion (that the parts could not be cold formed without the Devex process) which the Special Master found, as a matter of fact, to be incorrect. We affirm the rejection of plaintiffs' proposed standard of comparison, because the facts foreclose the use of that proposed standard.

67. Plaintiffs make an additional argument with regard to non-bumpers: the statute provides that the court "shall" award damages in an amount not less than a reasonable royalty, and that the award of no damages does not comply with the statute. We reject this contention. The statute requires the award of a reasonable royalty, but to argue that this requirement exists even in the absence of any evidence from which a court may derive a

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15. Plaintiffs' proposed royalty was premised on an assertion that was found to be false. There was evidence in the record supporting an alternative amount, however. We need not, therefore, reach the issue of whether plaintiffs had or met any applicable burden of proof with regard to bumper royalties. Nor do we reach the question of when the burden to refute a proposed royalty shifts to the infringer, or what the shifted burden entails.

reasonable royalty goes beyond the possible meaning of the statute. Even if there is no burden of proof on the party seeking damages in this type of case to come forward with a reasonable royalty, there must at the least be enough evidence in the record to allow the factfinder to formulate a royalty. Here, plaintiffs' proposed standard was vitiated by the facts, and there was insufficient evidence in the record upon which the fact finder could rely in formulating an alternative. There was no non-bumper industry-wide offer for the court and Special Master to use in arriving at a reasonable royalty. Thus, plaintiffs are not entitled to collect any royalty for non-bumper infringement.[16]

3. *Interest*

68. The Special Master, affirmed by the district court, awarded interest (delay damages) at the prevailing corporate bond rate on the royalty payments as of the date those payments became due, calculated yearly (number of infringing parts made each year). On appeal, defendant contends that such an award was improper. We disagree, and hold that under the facts of this case the award of interest as the yearly royalty payments became due was not an abuse of discretion.

69. Title 35 U.S.C. §284 provides that an award for infringement shall be "in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court." The language of the statute does not indicate as

16. Even if plaintiffs were entitled to a royalty — which they are not — on non-bumper parts, that royalty would be minimal, given the Special Master's fact findings on the ready interchangeability of the Devex and other processes in non-bumper making.

Because we conclude that plaintiffs are not entitled to any damages for non-bumper infringement, we need not reach the question of whether accused practices 1 and 8 infringed the Devex patent; accused practices 1 and 8 were both non-bumper processes. Appendix at 523, 557.

of when interest, if awarded, shall be calculated. We are not, however, entirely without guidance on this question. In *Aro Manufacturing Co. v. Convertible Top Co.*, 377 U.S. 476 (1964), the Supreme Court examined the 1946 amendment to 35 U.S.C. §284, pursuant to which a claimant became entitled to recover damages instead of damages plus profits:

> The purpose of the change was precisely to eliminate the recovery of profits as such and allow recovery of damages only.
>
> > "The object of the bill is to make the basis of recovery in patent-infringement suits general damages, that is, any damages the complainant can prove, not less than a reasonable royalty, together with interest from the time infringement occurred, rather than profits and damages." H.R. Rep. No. 1587 79th Cong., 2nd Sess. (1946), to accompany H.R. 5311, at 1-2; S.Rep. No. 1503, 79th Cong., 2d Sess. (1946), to accompany H.R. 5311 at 2.

377 U.S. at 505-06 (footnote omitted). Thus, in *Aro* the Supreme Court identified the purpose of the amendment, and stated that it was part of that purpose that damages in the amount of a reasonable royalty plus interest "from the time infringement occurred" be recoverable.

70. Moreover, in a case such as this one, 35 U.S.C. §284 itself supports the award of interest from the date of infringement. Section 284 requires that the damages be "adequate to compensate for the infringement." The complaint in this case was filed in 1956, and the Special Master awarded damages to plaintiffs for infringement which took place in that year. To do otherwise than award interest from 1956 would give defendant a windfall in the form of the use of the royalty money it should have paid to plaintiffs, and would deprive plaintiffs of

money they should have had. Moreover, a failure to award interest as of the date of infringement would encourage defendants to draw out litigation for as long a period as possible. The only sufferer from such a result would be the *prevailing* plaintiff — the innocent party.[17]

71. Nor does the award of interest from the date of infringement require appreciably more effort from those masters or judges with the responsibility of setting the amount due than that which would be expended in any event. Here, the master and trial court labored long and hard to ascertain the extent of the infringement and the amount of royalties due. The award of yearly interest did not add appreciably to this herculean task. The number of bumpers produced by infringing processes per year emerged in this case in connection with establishing exactly which accused practices infringed and the viability of alternatives to infringing practices (which necessitated examining what percentage of the bumpers formed each year were formed with infringing processes). Once the royalty rate was set, the award of interest became relatively simple.[18]

72. The award of interest from the year of infringement is consistent with *Trio Process*, where this court awarded "interest from the date of infringement, and costs" to the owner of the patent. 612 F.2d at 1361. *See also Trio Process Corp. v. L. Goldstein's Sons, Inc.*, 638 F.2d 661, 662 (3d Cir. 1981) (opinion on motion for clarification of mandate). While there was an established license rate in *Trio Process*, we decline to rule that the absence of such a rate precludes an award of in-

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17. Moreover, where, as here, the interest is as much as or more than the royalties, a failure to award interest from the date of the infringement would mean that the losing defendant actually gains from the infringement and the lengthy litigation.

18. Defendant does not object to the method used to calculate the interest nor to the rate, but only to the fact that it was awarded at all.

terest on the facts of this case. Especially where, as here, interest from the date of infringement can be readily calculated, it follows from *Trio Process* and from the purpose of the statute that interest should be calculated from the date of infringement. Policy likewise dictates this result: failure in a case like this one to award interest as of the date of infringement rewards infringers where those infringers have refused to accept or negotiate a royalty, and discourages the amicable licensing of patents.

73. This result is also consistent with *Hartford National Bank & Trust Co. v. E.F. Drew & Co., Inc.*, 188 F.Supp. 347 (D.Del. 1960), *aff'd per curiam*, 290 F.2d 589 (3d Cir.), *cert. denied*, 368 U.S. 825 (1961), in which the court, prior to *Aro*, awarded interest "from the end of each calendar year in which defendant's sales were made." 188 F.Supp. at 349. In addition, *see Marvel Specialty Co. v. Bell Hosiery Mills, Inc.*, 386 F.2d 287 (4th Cir. 1967), *cert. denied*, 380 U.S. 1030 (1968), in which the court awarded interest on the royalties from the date those royalties had become payable. The royalties in that case were, however, as in *Trio Process*, based on an established rate at which the injured party had granted actual licenses.

74. In *Pitcairn v. United States*, 547 F.2d at 1120-24, the court awarded delay damages "computed on a calendar year basis with interest starting on January 1 of each year on the royalties accrued during the preceding calendar year." *Id.* at 1121.[19] Such an award was necessary to " 'accomplish complete justice as between plaintiff and the United States.' " *Id.* at 1120, *quoting Waite v. U.S.*, 282 U.S. 508, 509 (1931). The court in *Pitcairn* used Moody's Composite Index of Yields on Long Term Corporate Bonds to set the delay

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19. Delay damages would continue to accrue until "the date of payment of the court's judgment herein." 547 F.2d at 1120.

damage ("interest") rate on the unpaid royalties. 547 F.2d at 1121.

75. We see no reason to rule that §284 does not allow an award of interest, or "delay damages," from the date of infringement in the face of the *Pitcairn* rule that §1498 allows such an award. Sections 1498 and 284 mandate doing justice to the party whose patent has been infringed. The failure to award interest to plaintiffs here would penalize the prevailing party and reward the infringer for its wrongdoing, and we decline to reach such an inequitable result, one which, moreover, would be inconsistent with Third Circuit precedent as well as with the applicable statute.

76. The result reached here is inconsistent with that reached in *Wahl v. Carrier Manufacturing Co.*, 511 F.2d 209 (7th Cir. 1975), where the court ruled that "interest should run from the date damages are liquidated." 511 F.2d at 215. The result reached here is not, however, necessarily inconsistent with that reached in *Georgia-Pacific Corp. v. U.S. Plywood Champion Papers Inc.*, 446 F.2d 295, 301 & n.7 (2d Cir.), *cert. denied*, 404 U.S. 870 (1971), where the court rejected the argument that *Aro's* quotation of H.R. Rep. No. 1587 constituted an adoption of the rule that interest should run from the date of infringement. In *Georgia-Pacific*, the court ruled that the award of interest is discretionary with the trial court, and that the trial court had the discretion to award interest as of the date of the last infringement. The court did not rule, however, that it would be an abuse of discretion to award interest as of the date of infringement. *But see Milgo Electronic Corp. v. United Business Communications, Inc.*, 623 F.2d 645, 667-68 (10th Cir.), *cert. denied*, 447 U.S. 928 (1980) (in patent cases the normal rule that interest only begins to run after the damages are liquidated is extended to allow the trial judge the discretion to award interest from the date of last infringement).

77. For the foregoing reasons we affirm the judgment of the District Court.[20]

A True Copy:

Teste:

Clerk of the United States Court of Appeals
for the Third Circuit

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20. We affirm the award of costs (including the Special Master's fee) against defendant. We also affirm the district court (and Special Master's) ruling that an award of multiple damages and attorney's fees would not be appropriate in this case.

UNITED STATES COURT OF APPEALS

For The Third Circuit

Nos. 80-2550/80-2551

DEVEX CORPORATION, TECHNOGRAPH, INC., WILLIAM C. McCOY, THEODORE A. Te GROTENHUIS, FREDERICK B. ZIESENHEIM, MARJORIE Te GROTENHUIS, WILLIAM C. McCOY, JR., and KATHERINE M. BASSETT

vs.

GENERAL MOTORS CORPORATION

Devex Corporation, Technograph, Inc., William C. McCoy, Jr., individually and as Executor of the Estate of William C. McCoy, deceased, Theodore A. Te Grotenhuis, Frederick B. Ziesenheim, Marjorie Te Grotenhuis, and Katherine M. Bassett,

Appellants in No. 80-2550

General Motors Corporation,

Appellant in No. 80-2551

(D.C. Civil No. 3058)

ON APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

Present: GIBBONS and HUNTER, *Circuit Judges* and STERN, *District Judge**

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* Honorable Herbert J. Stern, United States District Judge for the District of New Jersey, sitting by designation.

JUDGMENT

This cause came on to be heard on the record from the United States District Court for the District of Delaware and was argued by counsel on September 18, 1981.

On consideration whereof, it is now here ordered and adjudged by this Court that the judgment of the said District Court, entered October 6, 1980, be, and the same is hereby affirmed. Costs taxed against appellants in each appeal.

ATTEST:

Sally Mrvos
Clerk

December 15, 1981

UNITED STATES COURT OF APPEALS

For the Third Circuit

Nos. 80-2550 and 80-2551

DEVEX CORPORATION, et al.,
Plaintiffs-Appellants, Cross-Appellees

v.

GENERAL MOTORS CORPORATION,
Defendant-Appellee, Cross-Appellant

SUR PETITION FOR REHEARING

Present: ALDISERT, GIBBONS, HUNTER, WEIS, GARTH and SLOVITER, *Circuit Judges*

The petition for rehearing filed by
Defendant-Appellee, Cross-Appellant

in the above entitled case having been submitted to the judges who participated in the decision of this court and to all the other available circuit judges of the circuit in regular active service, and no judge who concurred in the decision having asked for rehearing, and a majority of the circuit judges of the circuit in regular active service not having voted for rehearing by the court in banc, the petition for rehearing is denied.

By the Court,
/s/ James Hunter, III, Judge

Dated: January 13, 1982

UNITED STATES COURT OF APPEALS

For the Third Circuit

Nos. 80-2550

DEVEX CORPORATION, et al.,
Plaintiffs-Appellants, Cross-Appellees

v.

GENERAL MOTORS CORPORATION,
Defendant-Appellee, Cross-Appellant

SUR PETITION FOR REHEARING

Present: GIBBONS and HUNTER, *Circuit Judges*, and STERN,* *District Judge*

The petition for rehearing filed by
Plaintiff-Appellants, Cross-Appellees

in the above entitled case having been submitted to the judges who participated in the decision of this court and no judge who concurred in the decision having asked for rehearing, the petition for rehearing is denied.

By the Court,
/s/ James Hunter, III, Judge

Dated: January 13, 1982

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* Honorable Herbert J. Stern, United States District Judge for the District of New Jersey, sitting by designation.

NOTICE: This opinion is subject to formal revision before publication in the preliminary print of the United States Reports. Readers are requested to notify the Reporter of Decisions, Supreme Court of the United States, Washington, D. C. 20543, of any typographical or other formal errors, in order that corrections may be made before the preliminary print goes to press.

SUPREME COURT OF THE UNITED STATES

No. 81-1661

GENERAL MOTORS CORPORATION, PETITIONER *v.* DEVEX CORPORATION ET AL.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE THIRD CIRCUIT

[May 24, 1983]

JUSTICE MARSHALL, delivered the opinion of the Court.

This case concerns the proper standard governing the award of prejudgment interest in a patent infringement suit under 35 U. S. C. § 284.

I

In 1946 respondent Devex Corporation (Devex) filed a suit for patent infringement against petitioner General Motors Corporation (GMC) in the United States District Court for the Northern District of Illinois.[1] Devex alleged that GMC was infringing Reissue Patent No. 24,017, known as the "Hendricks" or "Devex" patent. The patent covered a lubricating process used in the cold-forming of metal car parts by pressure.[2] On June 29, 1962, the District Court

[1] The suit also named Houdaille Industries as a defendant. After the case against GMC was transferred to the United States District Court for the District of Delaware, the case against Houdaille Industries was tried separately, see *Devex Corp.* v. *Houdaille Ind.*, 382 F. 2d 17 (CA7 1967), and eventually settled.

[2] Claim 4 of the Patent covers:

"The process of working ferrous metal which comprises forming on the surface of the metal a phosphate coating and superimposing thereon a fixed film of a composition comprising a solid meltable organic binding material containing distributed there through a solid inorganic compound meltable

held the Devex patent invalid and entered judgment for GMC. On appeal the United States Court of Appeals for the Seventh Circuit reversed the finding of invalidity and remanded for further proceedings. *Devex Corp.* v. *General Motors Corp.*, 321 F. 2d 234 (CA7 1963), cert. denied, 375 U. S. 971 (1964).

The case was then transferred to the United States District Court for the District of Delaware. After a trial the District Court ruled that there had been no infringement. 316 F. Supp. 1376 (D. Del. 1970). The United States Court of Appeals for the Third Circuit reversed, holding that the patent was infringed by GMC's use of certain processes in the production of bumpers and cold-extruded non-bumper parts. 467 F. 2d 257 (1972), cert. denied, 411 U. S. 973 (1973).

On remand the case was referred to a Special Master for an accounting. The Special Master ruled that three major divisions of GMC had used infringing processes in the manufacture of bumper parts, and selected a royalty rate "by reference to hypothetical negotiations" that it found would have taken place if GMC had sought to obtain a license from Devex. Special Master's Report at 71.[3] The District Court modified the royalty rate selected by the Special Master and entered judgment pursuant to 35 U. S. C. § 284, awarding

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at a temperatuare below the melting point of the ferrous metal phosphate of said coating and having a hardness not exceeding 5 on the Mohs' hardness scale, and thereafter deforming the metal."

In less technical terms, the Devex process employed "phosphate, soap and borax . . . to lubricate the pressure-forming operation, preventing harmful contact between the metal products and the machinery with which they are formed. . . . [T]he phosphate, soap and borax combination is especially beneficial because it may be easily cleaned from the metal product following its formation." *Devex Corp.* v. *General Motors Corp.*, 494 F. Supp. 1369, 1372 (D. Del. 1980).

[3] The Special Master also ruled that multiple damages and attorney's fees, which are authorized by 28 U. S. C. §§ 284 and 285, would be inappropriate in this case. These findings were adopted by the District Court and affirmed by the Court of Appeals and are not before us.

EDITOR'S NOTE

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Devex $8,813,945.50 in royalties, $11,022,854.97 in prejudgment interest, and post-judgment interest at the rate allowed by State law. The court determined what the annual royalties payments would have been, and calculated prejudgment interest on each payment from the time it would have become due. The Court of Appeals affirmed. 667 F. 2d 347 (1981). The court held that "the award of prejudgment interest as the yearly royalty payments became due was not an abuse of discretion." *Id.*, at 363. We granted certiorari to consider the standard applicable to the award of prejudgment interest under 35 U. S. C. § 284, —— U. S. —— (1982), and we now affirm.

II

Prior to 1946 the provision of the patent laws concerning a plaintiff's recovery in an infringement action contained no reference to interest.[4] The award of interest in patent cases was governed by the common law standard enunciated in several decisions of this Court. *E. g.*, *Duplate Corp.* v. *Triplex Safety Glass Co.*, 298 U. S. 448 (1936); *Tilghman* v. *Proctor*, 125 U. S. 136 (1888). Under the *Duplate* standard, prejudgment interest was generally awarded from the date on which damages were liquidated, and could be awarded from the date of infringement in the absence of liquidation only in "exceptional circumstances," such as bad faith on the part of the infringer. 298 U. S., at 459.[5]

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[4] R.S. § 4921, as amended, 42 Stat. 392, 35 U. S. C. 70, provided in relevant part:

"[U]pon a decree being rendered in any such case for an infringement the complainant shall be entitled to recover, in addition to the profits to be accounted for by the defendant, the damages the complainant has sustained thereby."

[5] Under the common law rule a plaintiff's damages were often treated as liquidated if they were relatively certain and ascertainable by reference to established market values. See generally *Miller* v. *Robertson*, 266 U. S. 243, 258 (1924); D. Dobbs, Law of Remedies § 3.5 (1973); C. McCormick, Law of Damages §§ 51, 54–56 (1935); "Prejudgment Interest: An Element

In 1946 Congress adopted amendments to the provision of the patent laws governing recovery in infringement actions. Act of August 1, 1946, c. 726, § 1, 60 Stat. 778, 35 U. S. C. (1946 ed.), §§ 67, 70.[6] One of the amended provisions, which has since been recodified as 35 U. S. C. § 284, states in relevant part:

> "Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court."

The Courts of Appeals have reached differing conclusions as to whether § 284 incorporates the *Duplate* standard and more generally as to the standard governing the award of prejudgment interest under § 284.[7]

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of Damages Not to be Overlooked," 8 Cumberland L. Rev. 521, 522–523 (1977). Thus a plaintiff whose damages were determined by reference to an established royalty that the plaintiff charged for the use of the patent was entitled to prejudgment interest. In contrast, where a plaintiff's damages, as here, were based on a reasonable royalty determined by the court, they were unliquidated and not entitled to prejudgment interest absent exceptional circumstances.

[6] In the 1952 codification, §§ 67 and 70 of the 1946 Code were consolidated in § 284, which has remained unchanged through the present day. The stated purpose of the codification was merely "reorganization in language to clarify the statement of the statutes." H. R. Rep. No. 1923, 82d Cong., 2d Sess., at 10, 29 (1952).

[7] Compare *Columbia Broadcasting System, Inc.* v. *Zenith Radio Corp.*, 537 F. 2d 896 (CA7 1976) (no prejudgment interest absent exceptional circumstances); *Radiator Specialty Co.* v. *Micek*, 395 F. 2d 763 (CA9 1968) (same) (dictum), with *Georgia-Pacific Corp.* v. *U. S. Plywood-Champion Papers, Inc.*, 446 F. 2d 294 (CA2) (§ 284 does not incorporate *Duplate* standard), cert. denied, 404 U. S. 870 (1971); *Trio Process Corp.* v. *L. Goldstein's Sons, Inc.*, 638 F. 2d 661 (CA3 1981) (same); *General Electric Corp.* v. *Sciaky Bros. Inc.*, 415 F. 2d 1068 (CA6 1969) (same); *Milgo Electric Corp.* v. *United Business Communications, Inc.*, 623 F. 2d 645 (CA10) (same), cert. denied, 449 U. S. 1066 (1980).

We have little doubt that § 284 does not incorporate the *Duplate* standard. Under that standard, which evolved as a matter of federal common law, prejudgment interest could not be awarded where damages were unliquidated absent bad faith or other exceptional circumstances. By contrast, § 284 gives a court general authority to fix interest and costs. On the face of § 284, a court's authority to award interest is not restricted to exceptional circumstances, and there is no warrant for imposing such a limitation. When Congress wished to limit an element of recovery in a patent infringement action, it said so explicitly. With respect to attorney's fees, Congress expressly provided that a court could award such fees to a prevailing party only "in exceptional cases." 35 U. S. C. § 285.[4] The power to award of interest was not similarly restricted.

There is no basis for inferring that Congress' adoption of the provision concerning interest merely incorporated the *Duplate* standard. This is not a case in which Congress has reenacted statutory language that the courts had interpreted in a particular way. In such a situation, it may well be appropriate to infer that Congress intended to adopt the established judicial interpretation. See, *e. g.*, *Herman & MacLean* v. *Huddleston*, —— U. S. ——, —— (1983); *Lorillard* v. *Pons*, 434 U. S. 575, 580–581 (1978). In this case, however, the predecessor statute did not contain any reference to interest, and the 1946 amendments specifically added a provision concerning interest in patent infringement actions. We cannot agree with petitioner that the only significance of Congress' express provision for the award of interest

[4] Section 285 provides: "The court in exceptional cases may award reasonable attorney fees to the prevailing party." The phrase "exceptional cases" was not contained in the 1946 amendments, but was added by the 1952 compilation for purposes of clarification only. See note 6, *supra*. The language of the 1946 amendments provided in relevant part that "the Court may *in its discretion* award reasonable attorney's fees to the prevailing party." 35 U. S. C. § 70 (emphasis added).

was the incorporation of a common law standard that developed in the absence of any specific provision concerning interest.

Having decided that § 284 does not incorporate the *Duplate* rule, we turn to a consideration of the proper standard for awarding prejudgment interest under that provision. Although the language of § 284 supplies little guidance as to the appropriate standard, for the reasons elaborated below we are convinced that the underlying purpose of the provision strongly suggests that prejudgment interest should ordinarily be awarded where necessary to afford the plaintiff full compensation for the infringement.

Both the background and language of § 284 provide evidence of this fundamental purpose. Under the pre-1946 statute, the owner of a patent could recover both his own damages and the infringer's profits. See *Aro Mfg. Co.* v. *Convertible Top Co.*, 377 U. S. 476, 505 (1964); n. 4, *supra*. A patent owner's ability to recover the infringer's profits reflected the notion that he should be able to force the infringer to disgorge the fruits of the infringement even if it caused him no injury. In 1946 Congress excluded consideration of the infringer's gain by eliminating the recovery of his profits, *Aro Mfg.*, *supra*, at 505, the determination of which had often required protracted litigation. H. R. Rep. No. 1587, 79th Cong., 2d Sess., 1–2 (1946); S. Rep. No. 1503, 79th Cong., 2d Sess., 2 (1946); 92 Cong. Rec. 9188 (1946) (remarks of Senator Pepper). At the same time, Congress sought to ensure that the patent owner would in fact receive full compensation for "any damages" he suffered as a result of the infringement. See H. R. Rep., *supra*, at 1 ("any damages the complainant can prove"); S. Rep., *supra*, at 2 (same). Accordingly, Congress expressly provided in § 284 that the court "shall award the claimant damages *adequate to compensate* for the infringement." (Emphasis added.)[9]

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[9]The wording of the amendment passed by Congress in 1946 was slightly different. It provided that the claimant "shall be entitled to re-

The standard governing the award of prejudgment interest under § 284 should be consistent with Congress' overriding purpose of affording patent owners complete compensation. In light of that purpose, we conclude that prejudgment interest should ordinarily be awarded. In the typical case an award of prejudgment interest is necessary to ensure that the patent owner is placed in as good a position as he would have been in had the infringer entered into a reasonable royalty agreement.[10] An award of interest from the time that

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cover general damages which shall be *due compensation*" for the infringement. 35 U. S. C. § 70 (emphasis added). See note 6, *supra*.

Section 284 derived from a House bill which specifically provided for an award of interest "from the time the infringement occurred." H. R. 5311 (1946), see H. R. Rep. 1587, 79th Cong., 2s Sess., Pt. 2, p.1. The bill as modified by the Senate Committee and enacted into law replaced this language with the language currently contained in § 284. The legislative history suggests that the language substitution was intended solely to make the award of attorney's fees discretionary rather than mandatory; there was no indication that the Senate Committee intended any substantive change in the treatment of interest. See S. Rep., *supra*, at 2. The passage of the Senate bill in the House was preceded by an assurance by Rep. Lanham, who managed the bill, that the the only substantive modification of the House bill concerned the attorney's fees provision. 92 Cong. Rec. 10649 (1946).

[10] See *Waite* v. *United States*, 282 U. S. 508, 509 (1931); *Jacobs* v. *United States*, 290 U. S. 13, 16 (1933) (interest from time of the taking is necessary to constitute adequate compensation under the Fifth Amendment); *Miller* v. *Robertson*, 266 U. S. 243, 258 (1924) (prejudgment interest required for "full compensation"). The traditional view, which treated prejudgment interest as a penalty awarded on the basis of the defendant's conduct, has long been criticized on the ground that prejudgment interest represents "delay damages" and should be awarded as a component of full compensation. See D. Dobbs, Law of Remedies § 3.5, at 174; C. McCormick, Law of Damages § 51, at 206–211 (1935); "Prejudgment Interest: An Element of Damages Not To Be Overlooked," 8 Cumberland L. Rev. 521 (1977). A rule denying prejudgment interest not only undercompensates the patent owner but may also grant a windfall to the infringer and create an incentive to prolong litigation. There is no reason why an infringer should stand in a better position than a party who agrees to pay a royalty and then fails to pay because of financial difficulties.

the royalty payments would have been received merely serves to make the patent owner whole, since his damages consist not only of the value of the royalty payments but also of the foregone use of the money between the time of infringement and the date of the judgment.

This very principle was the basis of the decision in *Waite* v. *United States*, 282 U. S. 508 (1931), which involved a patent infringement suit against the United States. The patent owner had been awarded unliquidated damages in the form of lost profits, *id.*, at 508, but had been denied an award of prejudgment interest. This Court held that an award of prejudgment interest to the patent owner was necessary to ensure "complete justice as between the plaintiff and the United States," *id.*, at 509, even though the statute governing such suits did not expressly provide for interest. Just as § 284 provides that the court shall award "damages adequate to compensate for the infringement," the statute at issue in *Waite* provided that the patentee shall receive "reasonable and entire compensation." 28 U. S. C. § 1498. In addition, § 284 contains a specific provision concerning interest. *Waite* thus provides strong support for our conclusion that prejudgment interest should ordinarily be awarded under § 284.

We do not construe § 284 as requiring the award of prejudgment interest whenever infringement is found. That provision states that interest shall be "fixed by the court," and in our view it leaves the court some discretion in awarding prejudgment interest. For example, it may be appropriate to limit prejudgment interest, or perhaps even deny it altogether, where the patent owner has been responsible for undue delay in prosecuting the lawsuit.[11] There may be

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[11] See, *e. g.*, *Board of Commissioners* v. *United States*, 308 U. S. 343, 352–353 (1939); *Redfield* v. *Bartels*, 139 U. S. 694, 701 (1891); *First National Bank of Chicago* v. *Material Serv. Corp.*, 597 F. 2d 1110, 1121–1121 (CA7 1979). See generally C. McCormick, *supra*, at 220–221, 228–229

other circumstances in which it may be appropriate not to award prejudgment interest. We need not delineate those circumstances in this case. We hold only that prejudgment interest should be awarded under § 284 absent some justification for withholding such an award.

III

Because we hold that prejudgment interest should ordinarily be awarded absent some justification for withholding such an award, a decision to award prejudgment interest will only be set aside if it constitutes an abuse of discretion. The District Court held that GMC infringed Devex's patent over the course of a number of years and awarded Devex a reasonable royalty as compensation. While GMC contends that Devex was guilty of causing unnecessary delay, the District Court rejected this contention when it concluded that "Devex has done no worse than fully litigate its claims achieving a large judgment in its favor" and awarded Devex costs on the basis of this conclusion. 494 F. Supp., at 1380.[12] On these facts, we agree with the Court of Appeals that the award of prejudgment interest was proper.

Accordingly, the judgment of the Court of Appeals for the Third Circuit is

Affirmed.

(cases cited therein); 8 Cumberland L. Rev., *supra*, at 534 (cases cited therein). The determination whether the plaintiff has unduly delayed prosecution of the lawsuit is committed to the discretion of the District Court and is reviewable on appeal only for abuse of discretion.

[12] The District Court's decision to award costs rested on its conclusion that Devex did not cause "unnecessary delay or [obtain] only slight success." 494 F. Supp., at 1380. The Court of Appeals affirmed the award of costs, and that issue is not before us.

SUPREME COURT OF THE UNITED STATES

No. 81-1661

GENERAL MOTORS CORPORATION, PETITIONER *v.* DEVEX CORPORATION ET AL.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE THIRD CIRCUIT

[May 24, 1983]

JUSTICE STEVENS, concurring.

The 1946 amendments to the patent laws replaced the *Duplate* standard with a presumption favoring the award of prejudgment interest in the ordinary case. As the Court correctly holds, however, § 284 does not automatically require an "award of prejudgment interest whenever infringement is found." *Ante*, at 8. In exercising its discretion to deny such interest in appropriate cases, the trial court may properly take into account the nature of the patent and the strength of the defendant's challenge.

In other contexts we have noted the public function served by patent litigation. In *Lear, Inc.* v. *Adkins*, 395 U. S. 653, 670 (1969), Justice Harlan, writing for the Court, explained:

> "A patent, in the last analysis, simply represents a legal conclusion reached by the Patent Office. Moreover, the legal conclusion is predicated on factors as to which reasonable men can differ widely. Yet the Patent Office is often obliged to reach its decision in an *ex parte* proceeding, without the aid of the arguments which could be advanced by parties interested in proving patent invalidity."

Hence, a patent challenge in the courts permits a more informed decision regarding the merits of a particular patent.

And, as we have long recognized, "It is as important to the public that competition should not be repressed by worthless patents, as that the patentee of a really valuable invention should be protected in his monopoly; . . ." *Pope Manufacturing Co.* v. *Gormally*, 144 U. S. 244, 234 (1892).

Of course, the general public interest in patent litigation does not justify denial of prejudgment interest in the typical case in which infringement is found. Wisely today the Court does not attempt to define precisely the category of cases in which an infringer, although ultimately unsuccessful in litigation, may have been sufficiently justified in its challenge to a particular patent to make it appropriate for the District Court to exercise its discretion to deny prejudgment interest. But the existence of that category of cases should not be overlooked.

UNITED STATES CODE
TITLE 35 — PATENTS

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§ 284. Damages

Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court.

When the damages are not found by a jury, the court shall assess them. In either event the court may increase the damages up to three times the amount found or assessed.

The court may receive expert testimony as an aid to the determination of damages or of what royalty would be reasonable under the circumstances.

TITLE 28

§ 1961. Interest

Interest shall be allowed on any money judgment in a civil case recovered in a district court. Execution therefor may be levied by the marshal, in any case where, by the law of the State in which such court is held, execution may be levied for interest on judgments recovered in the courts of the State. Such interest shall be calculated from the date of the entry of the judgment, at the rate allowed by State law.

(June 25, 1948, c. 646, 62 Stat. 957.)